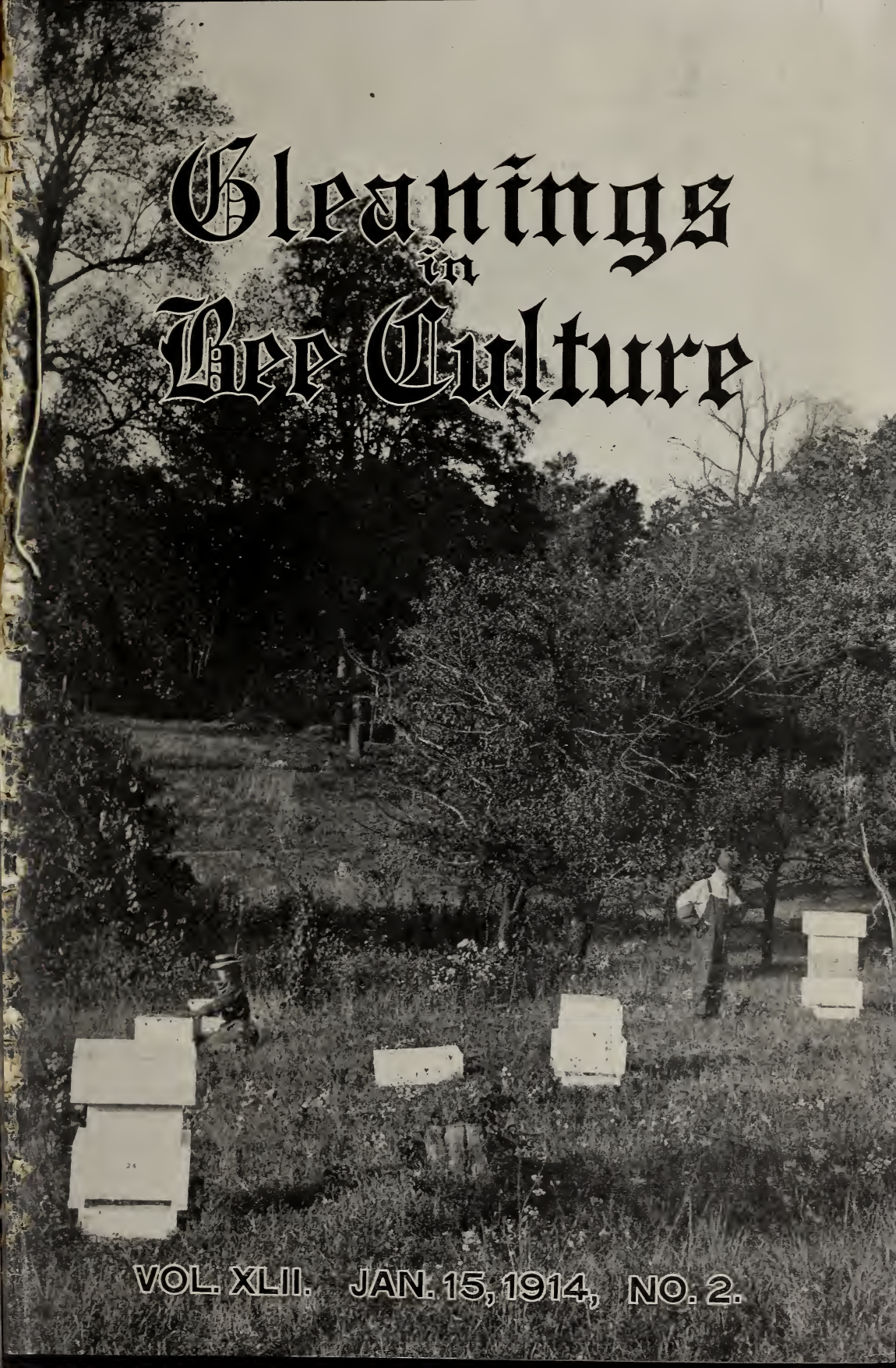


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Gleanings in Bee Culture



VOL. XLII. JAN. 15, 1914, NO. 2.

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A few dollars, plus your promise to pay the balance at the rate of 17 cents a day, places in your hands the new "Printype" model Oliver Typewriter No. 5, our very finest production.

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You can make the machine meet the payments. You doubtless spend more than this amount every day for trifles you do not need.

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Take advantage of the early-order discount, send us your list of requirements, and we will quote you our very best factory prices and discounts.

Having recently constructed an eight-car-capacity kiln, and having enlarged our power plant, we shall be able to handle your orders to the best advantage.

"Falcon" Supplies speak for themselves. Don't delay your order, but take advantage of this opportunity and let us ship the goods at your convenience.

Send for our foundation samples and Red Catalog, postpaid.

W. T. Falconer Manufacturing Company, Falconer, New York
Where the good beehives come from

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Central Ohio Honey Market

Finest quality WHITE-CLOVER honey a specialty. Producers who have not yet sold their crop should write. Those who have disposed of their crop and are in need of more for their trade, I shall be glad to supply at lowest prices consistent with highest quality and a fair margin of profit.

The correspondence of wholesale and retail dealers is especially solicited, as I am in position to furnish a grade of comb and extracted honey that will suit the most exacting trade. If interested, write for quotations and full description of the line,

Bee Supplies

Now is the best time to place your order for supplies for use next season. The prospect was never brighter, and there is every thing to gain and nothing to lose by ordering before the spring rush is on. Ask for revised price list and early-order discounts.

**Root Quality and Peirce Service
from Ohio's Supply Center**

E. W. Peirce, Zanesville, O.

Airdome Bldg., South Sixth St.

HOW FAR CAN A BEE SEE?

That question has been argued "time and again," but it doesn't worry me one-half so much as does another question—

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How many people there are to look, and how few there are to see and to think!

The best realms for good seeing are in nature.

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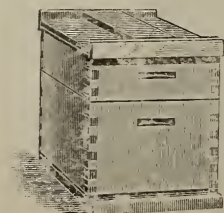
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29 years' experience in making everything for the beekeeper. A large factory specially equipped for the purpose ensures goods of highest quality. . . . Write for our illustrated catalog and discounts today.

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HONEY MARKETS

The prices listed below are intended to represent, as nearly as possible, the average market price at which honey and beeswax are selling at the time of the report in the city mentioned. Unless otherwise stated, this is the price at which sales are being made by commission merchants or by producers direct to the retail merchants. When sales are made by commission merchants the usual commission (from five to ten per cent), cartage, and freight will be deducted; and in addition there is often a charge for storage by the commission merchant. When sales are made by the producer direct to the retailer, commission and storage and other charges are eliminated. Sales made to wholesale houses are usually about ten per cent less than those to retail merchants.

NATIONAL BEEKEEPERS' ASSOCIATION GRADING-RULES. Adopted at Cincinnati, Feb. 13, 1913.

Sections of comb honey are to be graded: First, as to finish; second, as to color of honey; and third, as to weight. The sections of honey in any given case are to be so nearly alike in these three respects that any section shall be representative of the contents of the case.

I. FINISH:

1. *Extra Fancy*.—Sections to be evenly filled, comb firmly attached to the four sides, the sections to be free from propolis or other pronounced stain, combs and cappings white, and not more than six unsealed cells on either side.

2. *Fancy*.—Sections to be evenly filled, comb firmly attached to the four sides, the sections free from propolis or other pronounced stain, comb and cappings white, and not more than six unsealed cells on either side exclusive of the outside row.

3. *No. 1*.—Sections to be evenly filled, comb firmly attached to the four sides, the sections free from propolis or other pronounced stain, comb and cappings white to slightly off color, and not more than 40 unsealed cells, exclusive of the outside row.

4. *No. 2*.—Comb not projecting beyond the box, attached to the sides not less than two-thirds of the way around, and not more than 60 unsealed cells exclusive of the row adjacent to the box.

II. COLOR:

On the basis of color of the honey, comb honey is to be classified as: first, white; second, light amber; third, amber; and fourth, dark.

III. WEIGHT:

1. *Heavy*.—No section designated as heavy to weigh less than fourteen ounces.

2. *Medium*.—No section designated as medium to weigh less than twelve ounces.

3. *Light*.—No section designated as light to weigh less than ten ounces.

In describing honey, three words or symbols are to be used, the first being descriptive of the finish, the second of color, and the third of weight. As for example: *Fancy, white, heavy (F-W-H)*; *No. 1, amber, medium (1-A-M)*, etc. In this way any of the possible combinations of finish, color, and weight can be briefly described.

CULL HONEY:

Cull honey shall consist of the following: Honey packed in soiled second-hand cases or that in badly stained or propolized sections; sections containing pollen, honey-dew honey, honey showing signs of granulation, poorly ripened, sour or "weeping" honey; sections with comb projecting beyond the box or well attached to the box less than two-thirds the distance around its inner surface; sections with more than 60 unsealed cells, exclusive of the row adjacent to the box; leaking, injured, or patched-up sections; sections weighing less than ten ounces.

NEW HONEY-GRADING RULES ADOPTED BY THE COLORADO STATE BEEKEEPERS' ASSOCIATION, DECEMBER 13, 1911.

FANCY WHITE.—Sections to be well filled, comb firmly attached to all sides and evenly capped except the outside row next to the wood. Honey, combs, and cappings white, and not projecting beyond the wood; wood to be well cleaned; no sections in this grade to weigh less than 13½ ounces.

No. 1.—Sections to be well filled, combs firmly attached on all sides and evenly capped, except the outside row next to the wood. Honey white or very slightly off color. Combs not projecting beyond the wood; wood to be well cleaned; no section in this grade to weigh less than 13½ ounces.

CHOICE.—Sections to be well filled; combs firmly attached; not projecting beyond the wood, and entirely capped, except the outside row next to the wood. Honey, comb, and cappings from white to amber, but not dark; wood to be well cleaned; no section in this grade to weigh less than 12 ounces.

No. 2.—This grade is composed of sections that are entirely capped, except row next to wood, weighing from ten to twelve ounces or more, also of such sections that weigh 12 ounces or more, and have not more than 50 uncapped cells all together, which must be filled. Combs and cappings from white to amber in color, but not dark; wood to be well cleaned.

EXTRACTED HONEY.—Must be thoroughly ripened, weigh 12 pounds per gallon. It must be well strained, and packed in new cans. It is classed as white, light amber, and amber.

STRAINED HONEY.—This is honey obtained from combs by all other means except the centrifugal extractors, and is classed as white, light amber, amber, and dark; it must be thoroughly ripened and well strained. It may be put up in cans that previously have contained honey.

ST. LOUIS.—There is not much change in our honey market since our last quotation. The market recently has been very quiet on extracted and also comb honey. The market is well supplied with both western and southern comb honey. We are quoting today, in a jobbing way, from 15 to 16; *No. 1*, 14; light amber from 11 to 12 by the case; fancy white comb from \$3.00 to \$3.25; *No. 1* from \$2.50 to \$2.75, and light amber from \$2.25 to \$2.40; dark amber at \$2.00; light-amber extracted in barrels, 6%, and five-gallon cans at \$7.50. Beeswax, 32 for prime; inferior and impure sells for less.

St. Louis, Mo., Dec. 26.

R. HARTMANN PRODUCE CO.

Honey reports continued on page 5.

We are in the Market for Both Extracted and Comb Honey

Would like to hear from those having Fancy and Number One Comb Honey. State best prices delivered Cincinnati. We want Extracted Honey, too. No lot too large or too small for us. We remit the very day shipment is received.

THE FRED W. MUTH CO.

204 WALNUT STREET

"The Busy Bee Men"

CINCINNATI, OHIO

P. S.—Ship us your old combs and let us render them for you. Our process extracts the last drop of wax from the slumgum. We make money for you if you will ship us your old combs and cappings for rendering. Write for full particulars.

SPECIAL DELIVERY

During this month we shall double our usual efforts in points of delivery and service. We carry nothing but the Root make, which insures the best quality of every thing. We sell at factory prices, thereby insuring a uniform rate to every one. The saving on transportation charges from Cincinnati to points south of us will mean quite an item to beekeepers in this territory. We are so located that we can make immediate shipment of any order the day it is received.

Honey and Wax

If you haven't made arrangements for the disposition of your honey and wax for this season consult us. We buy both in large quantities, and can assure you of fair and courteous treatment, and a good price for your crop.

Shipping Cases

To sell your crop to the best advantage it must be well put up in attractive style. We have shipping cases that answer every requirement of looks and utility. Small producers who sell their crops locally will be interested in the cartons in which comb honey is put up to sell to the fancy customers at top-notch prices. We have honey-cans too, in cases for those who produce extracted honey. In fact, there isn't any thing we don't have that the beekeeper needs, either to produce his crop or help to sell it.

Early-order discount this month is 3 per cent.

C. H. W. Weber & Co.

2146 Central Avenue

Cincinnati, Ohio

Gleanings in Bee Culture

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H. H. ROOT

Ass't Editor

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Business Mgr.

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ALBANY.—The honey market is quiet, with little stock on hand, and light receipts. Buying now is in single cases and small lots for grocers to patch out with. We quote fancy white, 16; medium white, 16; amber, 13½ to 14; buckwheat, 13 to 14; extracted, slow, at 7½ for buckwheat; 8 for amber; 8½ for white. Beeswax, 30 to 32.

Albany, N. Y., Dec. 28.

H. R. WRIGHT.

INDIANAPOLIS.—A slackened demand faces the honey situation. Fancy white comb is selling at 16 to 17; No. 1 white, one cent less; finest extracted, 9 to 10 cents in five-gallon cans. Producers who sold early in the season were fortunate in doing so. Beeswax is in good demand, and producers are being paid 31 cents cash or 33 cents in trade.

Indianapolis, Jan. 3.

WALTER S. POWDER.

LIVERPOOL.—Present stocks of Chilian honey are about 2000 barrels. There is no demand. From \$7.20 to \$7.68 is quoted for pile No. 1; \$6.24 to \$6.48 for pile No. 2; \$5.76 to \$6.00 for pile No. 3. Californian retail sales, value \$10.32 to \$10.80. New Zealand, 20 cases white, fine, \$10.80. Jamaica, 50 packages sold at \$6.84 to \$8.75.

Liverpool, Dec. 20.

TAYLOR & CO.

INCREASE Your SALES

... By a Liberal Distribution of Our Booklet ...
THE USE OF HONEY IN COOKING

The 1913 edition is ready for distribution, and may be had in quantities at reasonable rates. The back cover page affords space for a display advertisement. As this booklet contains no advertising whatever, it can be employed with telling effect. Better order your supply early. Sample and prices in quantities on application.

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Beekeepers should bear this in mind when ordering their supplies. A full line of supplies always in stock. Send for catalog

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remember we carry a full stock and sell at the lowest catalog price. Two lines of railroad—Maine Central and Grand Trunk. Prompt service and no trucking bills.

THE A. I. ROOT CO., Mechanic Falls, Maine

J. B. MASON, Manager

How to Keep Bees

BY ANNA BOTSFORD COMSTOCK

This is an excellent book for the beginner. Nothing better. We cordially recommend it to all who are learning beekeeping by their own effort. Having commenced beekeeping three times, the talented author is in a position to furnish the right kind of advice. You can not go wrong in getting this book. It is charmingly written and easily understood. Price \$1.10 postpaid.

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as much about your financial affairs as you yourself if you bank by mail. . Privacy, however, is only a minor advantage of our Banking-by-Mail plan

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The only cyclopedia on bees, 712 pages, fully illustrated. Every phase of the subject fully treated by experts. Price \$2.00 postpaid; money refunded if unsatisfactory.

THE A. I. ROOT CO., Medina, Ohio.

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A. L. BOYDEN, Advertising Manager.

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Issued semi-monthly.

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Preferred position, inside cover, 50 per cent additional.

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Bills payable monthly.

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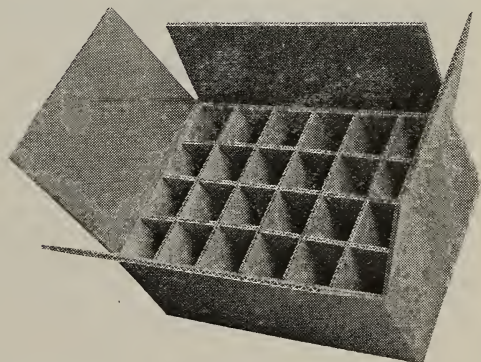
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Attractive in form. Good illustrations. 36 pages of reading matter in each issue. 24 numbers each year.

Popular Electricity and the World's Advance, Regular price, \$1.50 a year.
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Send Orders to

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Canadian postage 65c a year additional; foreign postage \$1.35 additional.

Beeswax Wanted!

We Expect to Use
SEVENTY TONS

of beeswax during the next **SIX MONTHS**, and we have on hand less than twenty tons. We offer for good average wax, delivered at Medina, 32 cts. **CASH**, 34 cts. **TRADE**. If you have any good wax to sell write to us or ship it by freight. Send us shipping receipt, giving us gross weight also net weight shipped. Be sure to mark your shipment so we can identify it when received.

Beeswax Worked into Foundation

If you want your wax worked into foundation we are prepared to do this for you at prices equal to those made by other standard manufacturers. Write for price if interested.

The A. I. Root Co., Medina, Ohio

New Goods Arriving!

We are getting our stock for next season, and should be glad to have your order for any supplies you are to use next year. A folder, with new prices, will be mailed you on request. . . .

The A. I. Root Co., Syracuse, N. Y.

"If goods are wanted quick, send to Pouder."

ESTABLISHED 1889

Bee Supplies

Bees in this zone are in winter quarters with a bounteous supply of natural winter stores, and I believe that no other feature is quite so important as regards safe wintering as an abundance of wholesome stores. The fall flow was so profuse that in some instances brood-rearing was curtailed early on account of crowded condition, and some strong colonies were weakened on this account. A few losses may result from this condition. The white clover in this zone is in good condition with the exception of a few counties which suffered from drouth. Conditions for ensuing year are very encouraging for both beekeeper and the supply-dealer. The last year will be remembered as a most excellent honey year, and with it came the best demand for honey that has ever been known. I am receiving more inquiries and orders for Root Bee Supplies than ever before during midwinter, and some discounts for early orders are still available. The policy of this house as to prompt shipments and a fair and satisfactory deal will be maintained as heretofore, and I hope to deal with you in a way that will justify your recommending my goods to your neighbor.

WALTER S. POWDER:—*I am more than pleased with your promptness. Kentuckians are generally credited as being quick with a gun, but I do not think the fastest in that line can equal the speed a certain Indiana man uses in shooting out the goods. Those paper honey-jars are certainly the trick for local trade.*

Louisville, Ky.

Yours truly,

OTTO F. RECKTENWALD.

I should like to place in your hands my catalog with 1914 revised prices on bee supplies. Or send a list of your requirements, and let me see if I can not create a saving for you by quoting an estimate. This will place you under no obligations, and it will be one of my pleasures.

I can use more beeswax, and am now paying 31 cents cash or 33 cents in exchange for goods.

Walter S. Pouder
873 Mass. Ave., Indianapolis, Indiana

Special Sale of Honey

WE HAVE produced a fine lot of extracted honey this season from our eight out-yards. In addition to our own honey, we have purchased many other lots from prominent producers, and are now able to offer for prompt shipment the following flavors of extracted honey:

ALFALFA,	ORANGE,
SWEET CLOVER,	LIGHT AMBER,
WHITE CLOVER,	DARK AMBER,
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DR. C. C. MILLER

American Bee Journal, Hamilton, Illinois

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NO. 2

Editorial

OUR bees on the Apalachicola River, Fla., are doing finely. Ti-ti is just about ready to open up, when the bees will have natural pollen and nectar.

SOME recent reports go to show that California is having refreshing rains. Whether these are going to insure a crop of mountain-sage honey or not we have not yet been advised.

WHEN we read the telegraphic reports of the floods in Texas we wondered how our bees on the Apalachicola River would fare, because they are on platforms but slightly above high-water level on the banks of the river. Fortunately for us, however, the floods did not visit that section.

THE FLOODS IN TEXAS.

In this issue, page 47, Louis H. Scholl tells of the awful destruction wrought by the floods in certain parts of Texas; of how he and certain other beekeepers lost many hundred colonies. The sympathy of our readers, we know, will go out to them.

OUR COVER PICTURE.

THE cover picture for this issue shows Benjamin J. Mayo and his son at the edge of their picturesque apiary. The engraving, page 62, shows a larger portion of the apiary situated in a well-sheltered location. In addition to the particulars given in the article by C. B. Morris, page 59, Mr. Mayo himself writes as follows:

I cleared a small part of my woods and made a beautiful grove for my growing apiary (as shown on the cover page); but as the bees did not build up as rapidly as I thought they should, I moved some into my orchard, a more open place (as seen by the picture on p. 62), where they got more sunlight. This solved the difficulty, as those in the orchard did far better than those in the grove, shaded so much. My spring count (1912) found me with fifteen hives of the dovetail pattern.

I should also like to add my testimonial to the plan of Mr. Arthur C. Miller of introducing queens by smoke, as I have tried it with twenty queens and find it works every time.

I have been running for extracted honey only, as I think the honey in this locality is too dark for

comb. This I have been selling in three-pound packages at fifty cents, and have no difficulty in disposing of all of it. I think I increased too fast last season as my crop was not what I thought it should have been; but I did fairly well, getting 1000 lbs.

Metuchen, N. J., Oct. 31.

THAT WINTER NEST AGAIN.

WE recently received a letter from Mr. George B. Howe, of Black River, N. Y., one of the most prominent honey-producers and queen-breeders of that State, and a very close observer. Among other things he refers to the winter nest. As it confirms our position we present it here for what it is worth.

I wish to say something on this winter-nest question. *You are right.* I go to the *bee* for all my knowledge. Go to any hive—better yet, a bee-tree; cut said tree and see what condition you find. Back to the hive! Unless you have fed said colony beyond all *bee* reason, again you will find that winter nest, and in cold weather a bee and sometimes more than one bee in a cell. The colder the time, the more compact that cluster will be; and unless you have studied this question you will not believe it possible for a large colony to get into so small a space when it is zero or below. The age of the queen does not change the color of her drones. The color of the comb may make a slight difference. Some claim this.

GEORGE B. HOWE.

THE SPECIAL NUMBERS FOR 1914.

FOR the last two years we have received occasional letters from readers who have overlooked announcements regarding special numbers, and who, after reading some one of the special numbers, jumped to the conclusion that GLEANINGS has "gone daffy" on the special subject in question. For instance, after the publication of our last poultry number, which was our regular Feb. 15th issue for 1912, we received a letter from a subscriber complaining because of the undue amount of space we were giving to the question of the raising of chickens. He pointed out that our Feb. 15th issue was almost all on that subject! Not being a poultry-man he was naturally afraid we were going to get too far away from the straight and narrow path of beekeeping.

As there have been other letters each year from those of our readers who have not noticed the announcement of our plan, we

wish to mention again the list of special numbers for 1914. January 1 (last issue), bees and poultry; February 1, bees and fruit; March 1, beekeeping in cities; April 1, breeding; June 1, moving bees; August 1, crop and market reports; September 1, wintering.

THE NEXT NATIONAL CONVENTION TO BE HELD
AT ST. LOUIS, FEB. 17—19.

OUR readers will notice elsewhere that the next convention of the National Beekeepers' Association will be held at St. Louis on Feb. 17, 18, and 19. St. Louis has the reputation of being the most centrally located large city in the United States. As it is convenient from the east and west and from the north and south, there ought to be a large attendance. Mr. R. A. Holekamp, of the Holekamp Lumber Co., St. Louis, has been asked to arrange for a hall in which to meet. He writes us that he would appreciate it if those who expect to attend would send him a postal card so that he may arrange for proper hotel accommodations "at reduced rates. Mr. Holekamp is an enthusiastic beekeeper and a live wire at conventions. The members of the National, and all others who expect to attend this convention, will do well to get in touch with him immediately. Unfortunately for us the date of this meeting comes when E. R. R. will be in Florida; and this necessarily means that his assistant, H. H. Root, will be doing double duty at Medina. We shall try to have a representative present, and probably arrange for a demonstration of a power-driven extractor with a complete modern extracting equipment, just such as is now used by large producers. This will be given in a separate room or building, apart from the regular convention hall.

We understand that the management is laying plans to make this a big meeting, and a great social meet as well.

MOVING BEES TO THE SOUTHLAND FOR INCREASE; LOOK BEFORE YOU LEAP.

APPARENTLY our experiment of shipping a carload of bees to Florida to make an increase of 100 or 200 per cent is attracting a good deal of attention if we may judge from the correspondence that has been coming in. We desire to say to one and all, do not think of moving a carload of bees south till you have spent a month or so in or near the point where you propose locating. There are three things you should know. (1) It is very important to find a spot that will not overlap on some one else. (2) Make sure that the point is one that will support bees. (3) Learn the locality before moving.

The only way one can make it practicable

to take a carload of bees south is to arrange with some beekeeper already in the vicinity to find you a location that will be advantageous to you and not interfere with the other fellow. A better plan is to go a month ahead and look the situation over. There is plenty of unoccupied territory in the South, providing one will take the pains to find where it is. No beekeeper in the North or elsewhere can afford to go into a locality already overstocked. He will be interfering with his own interests, and at the same time cut down the yield of the local residents, and at the same time incur their ill will. This country is so large that there is room enough for all; but there is not room enough for a man to put his bees in a location close to another.

It sometimes happens that one can buy out the location of another beekeeper. This is precisely what we did with Mr. A. B. Marchant. He had a location apart from every one else which he was willing to sell. This was secured, and that is where our bees are now placed.

An experienced beekeeper from the North would be working to a great disadvantage if he does not know the bee flora of the new bee country. This is the reason he should spend some time in the proposed location in advance and before he moves the bees. Beekeeping in the South is not the same as beekeeping in the North. Any one who attempts to move a car of bees South without the proper knowledge of the new conditions will fully comprehend when it is too late that "Experience is a good school, but the tuition is high."

THE NEW METHOD OF INTRODUCING WITH
SMOKE; REQUEENING WITHOUT
DEQUEENING.

WE call attention to the suggestive article by Mr. A. C. Miller, p. 50 of this issue, entitled "The Economics of Requeening." Our correspondent figures that the direct loss of queens introduced by the cage plan is about 40 per cent. This may be true, perhaps, when we consider queens sent through the mails and introduced by persons of little or no experience; but our loss does not exceed 10 per cent, and is usually less. The loss by the average beekeeper is greater, perhaps, because he is over-solicitous in that he keeps opening the hive and peeping into it to see how the new queen is coming on. If he paid three or four dollars for her, and he is a beginner with only two colonies, he will open the hive every few hours, and perhaps he will try to hasten the operation. Such a procedure only makes the matter worse. Our best results from introducing by the cage plan have invariably been secured by

leaving the colony severely alone, allowing several days to elapse *after* the queen is supposed to have emerged from her cage. Repeatedly have we seen queens balled that had been out of the hive only a few hours. Naturally enough, she is shy, and the act of opening the new hive frightens her the more. If she starts to run, or skulks, and especially if she pipes or squeals, she invites attack, with the result that she is promptly balled. Years ago, when we were rearing queens, and introducing, we found so many cases of balling immediately after opening the hive that we concluded it was a bad practice. Now, then, to return:

If Mr. Miller figures in the class of beginners who will tinker with their bees too much while the process of introducing is going on, the loss may be as great as 40 per cent; but we do not believe that, with the experienced beekeeper, it will be over 10 per cent. We remember one large producer ordered 100 queens. He wrote back and ordered ten more queens after he had introduced the hundred, saying he had bad luck. He had lost ten queens by the cage plan, and he wanted ten more. He intimated that some of the queens might have been old virgins, and if that were true it would account for his failure.

AN IMPORTANT CASE OF HONEY ADULTERATION WON BY THE GOVERNMENT.

WHEN the new pure-food law went into effect, and later the pure-food laws in the various States, the adulterations of honey, particularly with glucose, were stopped or almost entirely so. Prior to that time a large part of the bottled honey on the market put out by the packing-houses was adulterated with glucose, and there was no way to stop it. In the mean time the honest beekeeper had to compete with this cheap twangy stuff; and as the grocer could buy the glucose mixtures for less money, the beekeeper was given a poor show. But since the enactment of the national pure-food law (thanks to Dr. Wiley) glucose adulteration has, to a great extent, ceased. To some extent cane-sugar syrup has been used as an adulterant, but to only a very limited extent, because glucose was so much cheaper. As it was comparatively easy to detect the addition of cane sugar or glucose—especially the latter—the honey adulterators were compelled to quit using them or get into trouble with Uncle Sam.

But later on there came a species of adulteration that was very difficult to detect. A process had been discovered for making what is called "invert sugar." Although an artificial product, this came very near an-

swering the chemical tests for a pure honey. The adulterators then saw their opportunity to put invert sugar into honey and sell the combination for much less than any pure honey could be sold for. They felt safe from detection because they believed no chemist would positively be able to show up the fraud. But it was not long before the Government chemists were able to do so, and the adulterators were stopped. Shortly after, however, the chemists of the manufacturers discovered another process for making a new invert sugar that they felt sure would defy the best pure-food chemists of the country, and for a time the Government men were up against a hard proposition. But the Bureau of Chemistry, Washington, D. C., kept busy, and finally discovered several methods by which even this new invert sugar could be detected when mixed with honey.

A recent test case before the United States court held in Philadelphia was tried and won by the Government. This is one of the most important cases ever held; and the fact that the Government is now able to detect any form of invert sugar when mixed with honey or any other kind of sweet is going to mean much to the beekeeping interests, not only in the United States but to the whole world, for Uncle Sam will see to it that all the chemists are properly informed as to the methods he used in detecting invert-sugar adulteration in honey.

So important and far reaching was this case that we asked our chemist, Mr. Selser, who was not only present but a witness at the trial, to prepare a technical statement showing the methods that were used by the Government to prove the presence of invert sugar in the honey that was seized. Before doing so he shows the difference between the two invert sugars.

Furfural was so pronounced in the conversion of the dextrose of cane and beet sugar into the first invert sugar or levulose and dextrose that Browne & Fehles' chemical tests soon exposed the fraud. The food adulterators soon discovered their mistake. They then, by using a small per cent of tartaric or other acids, and heating at a low temperature, accomplished the inversion without producing any furfural. They now felt they had an invert sugar that the pure-food chemist could not detect from the natural article, honey. They became very bold through the assurance of their chemists.

About January, 1912, a large syrup and honey company of New York, doing a business of a quarter of a million a year in mixing honey, etc., sold and shipped to a Philadelphia dealer in pure honey six cases of what he bought as pure honey, and labeled "Choice Pure Strained Honey." The government officers, waiting for the opportunity, at once seized the shipment as misbranded and adulterated. This New York firm, evidently, were so sure their adulteration of honey with invert sugar could not be detected that they employed the highest-priced and best corporation lawyers doing a large business in

the United States Supreme Court, along with the best expert chemists they could find. The Government, finding that the defendant would not submit to the fine and penalty, and realizing that it would be a test case of chemist against chemist, had its two United States District Attorneys in Philadelphia and its chief Prosecuting Attorney from Washington prepare the case for trial. The Government called only expert chemists, its own Chief Chemist with his three assistants from the Sugar Laboratory at Washington, making all its pure-food analyses; its Chief Chemist in the Philadelphia laboratory, and the best Government expert on honey analysis in the United States, brought from Seattle, Wash., and one expert from civil life, who has spent about a quarter of a century on the analysis and natural composition of pure honeys. There were thus arrayed legal and chemical experts against legal and chemical experts, resulting in the cost to each side of many thousands of dollars, from which the beekeeper will get a lasting benefit.

Every legal obstacle was thrown in the way, and many of the expert chemical opinions challenged by the defense, with a counter chemical expert's opinion, and, as a result, the trial which might have been concluded in a single day lasted for about ten days.

For those who may be interested in the chemical side of the case, and others who might feel there is yet a chance of safety in mixing their honey with this new invert sugar made with tartaric acid, we give a brief outline of the chemical lines upon which the case was fought and won.

The first and most important fact brought out in the testimony was the difference between *natural* invert sugar (honey) and *artificial* invert sugar made by the use of tartaric acid. Judge Holland was especially interested in the line of testimony on this point, questioning the witness again and again. The Government chemists showed that all natural honeys contain soluble salts and basic acids. They had a table of the honeys of the world gathered in Washington, showing the variance of these salts and acids in the honey of all varieties. The defense claimed their honey was 80 per cent Cuban and 20 per cent buckwheat; but the government showed that there could not have been over 40 per cent of these honeys in the sample, since the sample was just in that proportion deficient in these soluble salts and basic acids. This point was contested by the defendant on the ground that some mineral salts had been extracted with the dirt when it was heated and strained, and that this heating and straining would account for the deficiency. The Government admitted that, while some mineral salts could be extracted with the dirt, yet the salts that the Government chemists showed deficient was in *solution*, and, if present, could not have been eliminated by heating, straining, or filtering.

The Government further showed that the inversion in the honey-sac of the honeybee is never quite complete in the case of sweets gathered by the bees from sugar-cane, corn-blossom, honey-dew, or sugar syrup fed to the bees, for the very reason that soluble salts were never present in any of them. This explains why sweets gathered by bees, from the above sources, fail to make a honey that will meet the requirements of the Government standard; but all nectar gathered by the bees, and stored from *pollenized plants or flowers*, has soluble salts in their composition.

Again, the protein test was another strong point in favor of the Government, and an important factor in winning the case.

The Government chemists, in determining the nitrogenous material, by both the ordinary and the Kilderhahl methods, found .14 per cent of protein in a sample seized, where the records show that a normal Cuban honey, of which the defendant claimed the sample was 80 per cent Cuban, had .5 per cent, or $\frac{1}{2}$ of one per cent, while the German government specialists' literature state that .2 per cent is the lowest known protein in any pure honey.

The polariscope test was another hotly contested one. The direct and invert reading at a temperature of 20 Cén. and at 87 Cén., figured on a dry basis, showed the resultant actual difference in the two temperatures to be 23.2. Literature on the subject shows a range of 23 to 33, with an average of 27, clearly showing it to be away below the average, or just what 40 per cent with 60 per cent of invert sugar would allow.

Again, in the tartaric-acid test there was found .08 per cent of tartaric acid in sample, while natural honeys contain only a scanty trace, and in Cuban and buckwheat honeys no tartaric acid is found.

Finally, in the pollen-grain test of the microscope, while it was admitted to be inconclusive, the result corresponded with the small per cent of honey in the sample seized.

We here give part of Judge Holland's charge to the jury, for it is significant:

Gentlemen of the Jury:—Every man, woman, and child in the United States, when he is hungry, needs food; and when he is sick he needs drugs; and the individual citizen is unable to see to it that the food purchased or the drugs purchased are pure, and the Government has taken on itself the work of perfecting that for the whole people, so that this is a contest for pure food for the protection of the individual citizen who has not the facilities or the information to protect himself. It is a very, very beneficial act; but it has no terror for the man (or, rather, the manufacturer) who sells the pure article and brands it what it is. It is a fact, notwithstanding the attempt which did throw a great deal of doubt and uncertainty over the work of the experts in this case, that chemistry has been wrought to such a high point of efficiency that it can be told with certainty, or at any rate with a certain degree of certainty, what is contained in almost any substance, whether or not it is pure, or whether or not it has some other substance mixed with it.

You will notice that an article is adulterated if any substance has been substituted, whole or in part. There is no question as to whether the adulteration be deleterious or injurious to the health. The substitution may be beneficial; but the law is to guarantee each citizen that, as a consumer, he shall know, when he desires to purchase a certain article, what he gets and what he pays for. That is the object of the law. It is to protect the consumers against the adulteration or misbranding of their goods and their drugs so that they may be able to rely on what an article is said to contain, and may rely so that they will not be misled by the label.

The Government, in its supervision of matters of this kind, concluded that this particular brand of honey, which is labeled "Excelsior Choice Pure Strained Honey," is not a pure honey, and it seized these six cases, and it now brings this proceeding, charging that it is impure or adulterated in one of its labels, and in the other that it is misbranded. Their label on it, "Choice Pure Strained Honey," is not true, as it contains other matters besides pure honey, and, therefore, it is misbranded. Their expert proved what is alleged.

Now, we are entirely dependent upon the testimony of experts with the sole exception of the defendant himself. The Government experts gave authority, and testified and gave an account of the analysis they made for the purpose of ascertaining what this mixture contained. They stated positively that they made his examination and they gave the result. They started with what they regarded as the most significant analysis, which is the one which produces the ash result, and they went through an entire list of known methods in chemistry by which they can ascertain whether the honey is pure or adulterated. They took Browne & Fehles' tests, and produced part dextrose and levulose, and the polarization in finding tartaric. There were nine tests in all.

As evidence on the side of the Government, you will recall with what intelligence Government experts maintained their position as to the work they had done; and you will judge, of course, of the method in which it was done, and judge whether or not you will accept their conclusion or the conclusion reached by the expert of the defendant.

The jury retired at the close of Judge Holland's charge, and, after deliberating about 50 minutes, brought on a verdict of guilty on both charges of adulterating and misbranding.

Stray Straws

DR. C. C. MILLER, Marengo, Ill.

J. E. HAND, thanks for sounding a needed warning note as to feeding sugar, p. 858. Besides the reasons you give against it, there is, I think, another. In honey there are elements not found in sugar (iron, etc.), and these may be of great importance to the health of bees, even though small in quantity.

REPLYING to THOS. P. BOWLES, I would say that it is as well to have the same number of sections ready in advance when prospects are poor as when they are good. After a severe drouth, all clover apparently killed, I've had quite a crop; although little or nothing may be expected next year from plants starting from seed next spring. But honey may come from unexpected sources. At any rate, foundation in sections will keep all right till the first good year that comes.

ROBERT HUDSON asks if Caucasians look like hybrids. They look more like blacks—so much so that sometimes an expert may be fooled. There are, however, yellow Caucasians that look more like Italians. [Caucasians look so much like blacks that we do not believe that even experts can tell the difference. Sometimes it is very difficult to distinguish the difference between Carniolans and blacks, although the former have more of a bluish-black appearance than a grayish black.—ED.]

John Phin, recognized authority on agriculture, died of pneumonia at St. Joseph's Hospital in Paterson, N. J. He was 85 years old. It was as a microscopist that he became prominent after retirement from teaching twenty years ago. He wrote more than 200 books on scientific and other subjects.—*Chicago Daily*, Jan. 1, 1914.

ANOTHER good friend gone. He kept abreast of the times in matters apicultural to the last, and not long ago wrote me that he still kept one colony of bees. [We also have been having some delightful correspondence with Mr. John Phin. We first made his acquaintance when we were studying the microscope nearly 40 years ago. We read with delight his book on the subject, and his journal on microscopy, published at the time. We had lost track of him until a recent letter showed that he still maintained his interest in bees. Perhaps some of our older readers will remember that some years ago he got out a dictionary of beekeeping terms.—ED.]

"MR. PRITCHARD believes that hard candy is the best material to feed in an emergency during cold weather," p. 29. No doubt that's right; and with emphasis on the "emergen-

cy," the emergency being when good honey can not be obtained; for I don't believe that sugar candy is ever as good for man or bee as the best honey. [That depends. We have put some colonies on dry combs, and all they have is dry candy. The candy is the thing that induces brood-rearing, and perhaps you would not use it for that reason. What we are after is a large force of bees early in the spring. Sealed honey or sealed stores of any kind do not invite brood-rearing. Indeed, it is our opinion that colonies will go into a state of hibernation on sealed stores more readily than on any other kind of feed that can be given.—ED.]

I DON'T know that I've ever taken much part in the controversy about bees moving eggs, but it never seemed reasonable to me that bees would do such a thing. To be sure, eggs have been reported where no queen could reach; but there was no accompanying affidavit that no laying worker was in the hive. Queen-cells were also found in such places, but I don't remember that any one ever reported that a good queen came from such cells. If the thing had been followed up I should have expected a dead drone to have been found in the cell.

But, June 6, No. 49 swarmed. The queen was caged, and the cage stuck in the entrance. Ten days later, when cells were killed and the queen freed, on one of the combs was found a spot perhaps two inches square rather compactly filled with young brood and eggs. Somewhat curiously, precisely the same thing occurred with No. 14, and with the same dates, only in No. 14 three queen-cells were started with very young larvæ. Here was my chance to see what would come from the brood in that comb, and especially from those queen-cells. I put the comb in an upper story over an excluder, and some time after the cells were sealed I tore one of them open. The inmate didn't look like a drone. I put the other two in a nursery, and in due time put the resulting queens—for any thing I could see they looked like any other queens—into nuclei, and when they were laying they were introduced into Nos. 6 and 27, and, so far as I know, they are doing duty as faithful sovereigns in those two colonies to-day. Now, will some obliging friend with a better stock of argument than I possess please come to my aid and help to explain how all this happened without admitting that the bees carried eggs dropped by the queen while in the cage?

SIFTINGS

J. E. CRANE, Middlebury, Vt.

I hope the shipping of bees to Florida by the Root Co. may prove a grand success. We are all interested.

* * *

The most interesting page in GLEANINGS for Nov. 1 is the last one devoted to temperance rather than bees. Oh, my! how it does quicken the pulse to read the good news!

* * *

That illustrated article by Prof. Gates, on pages 755 to 759, Nov. 1, is well worth the careful study of beekeepers desiring to make exhibits. Those Connecticut beekeepers are ahead of all the other New England States on honey exhibits, sure.

* * *

Does beekeeping pay? When I read in the A B C some time ago that our friend Dr. Miller had sold from his colonies devoted to the production of section honey an average of \$39.97, I said, "It certainly does—sometimes."

* * *

I have been making beeswax the past week; and from about 480 combs in Langstroth frames I made some 160 lbs. of wax, or 3 1-3 lbs. for each ten frames. I find the secret of success is a good wax-press, plenty of boiling water, and patience.

* * *

What Mr. Porter says, page 819, Nov. 15, about home-made hives and fixtures is well worth careful reading and meditation by all beginners. The shabby hives that many beginners use is enough to try the patience of Job, and do more to discourage prospective beekeepers than almost any thing else.

* * *

The article by Prof. Lovell, page 687, Oct. 1, ought forever to settle the question of the likes and dislikes of bees for certain colors. The reason he gives for bees trying to sting dark objects before white is because they see the dark object more readily—a fact that beekeepers will do well to remember.

* * *

I thought, Mr. Byer, that you lived away up north, almost under the shadow of the north pole, and here you are complaining on page 751, Nov. 1, that you were suffering from torrid heat Oct. 10. The weather was just fine away down here in Vermont at that time—just right to start the clover for next year.

* * *

Dr. Miller makes a good point, p. 740, Nov. 1, when he says it costs 39 per cent more per square foot to rear drones than workers. If we add to this the fact that

drones are large consumers from the day they hatch till they die, while workers make themselves useful from the day they hatch, we see the folly of leaving large blocks of drone comb in our hives.

* * *

On pages 682, 683, Oct. 1, are some illustrations of winter cases that remind me of one I made a year ago to house twelve colonies. It was 8½ feet long by 4½ feet wide. Three colonies were placed in it to face each side four inches from the wall, and about two inches apart. The space between the walls and hives was packed with planer shavings and some between the hives, and ten or twelve inches of shavings above the bees. They wintered perfectly.

* * *

PIECES OF COMB VS. FOUNDATION.

It makes one feel good to read how Mr. J. E. Hand is able to fill his sections with drawn comb, pages 805—807, Nov. 15. It looks as though it would work, too, where one has only a single yard to look after. But when I have six or eight yards to look after it makes my back ache to think of it. One might get drawn combs one year, and fit them into sections during the winter; but then they would be old combs and not look as nice as new, nor work as nicely either. I might say in this connection that I cut down all my partly filled sections to about one inch thick so the bees will build out with new wax the face of the comb from ¼ to ⅜ of an inch, which greatly improves the appearance. I do not seem to have much trouble in getting bees to commence in sections if honey is plentiful in the fields.

MELTED WAX BRUSHED ON TO FOUNDATION TO PREVENT SAGGING.

Mrs. G. N. Wisgate asks, page 620, whether there can not be some way devised easier than wiring frames to prevent sagging of combs. Dr. Miller, page 749, suggests the use of splints, and I should like to inquire as to the experience of those who have coated the upper part of the sheet of foundation with melted wax applied with a brush. It can be applied more quickly than frames can be wired and wires imbedded; and as I saw it practiced by Mr. Poppleton in Florida it appeared to be a success. I placed strong swarms on such foundation sheets without their sagging in the least so far as I could see; but there was little honey coming in at the time. The extra wax is utilized in drawing out the foundation into comb.

Beekeeping in the Southwest

LOUIS SCHOLL, New Braunfels, Texas.

ROSELLE JELLY, AND ADVERTISING IT.

It has not been very long since our senior editor had much to say about "roselle" and its culture. Not until recently, however, have I seen this plant grown to any extent, and the fruit made into delicious jellies and placed on the market. At one place I saw some four acres of roselle maturing its red, acid-flavored fruits in remarkable abundance. The plants averaged about six feet in height, spreading over the ground about five feet, and even more where they grew near irrigation ditches.

The product put out is a superior pure-food article, very clear and beautiful, red in color, and put up in glass jars nicely labeled, making an attractive package.

I noticed it in nearly all of the general stores. At some of the hotels several of these jars were left, one at a time being opened, and left with a spoon in it to be tasted by the patrons. This seemed unique to me, and may be applied in advertising honey to advantage perhaps.

* * *

HEAVY LOSSES THROUGH FLOODS IN TEXAS.

The year 1913 will go down in Texas history as one having a most excessive rainfall and some of the most severe floods ever witnessed in this State. The damage done will run into many millions of dollars, besides the loss of over 150 lives.

Among the first lives lost was the wife and four children of our friend Polk, a prosperous beekeeper at Belton, Texas. When Mr. Polk learned that there was danger of high water near some of his bees he proceeded there, with his oldest son, for the purpose of bringing them to higher ground. The flood came on so rapidly, however, that he was soon cut off from his own home and family, all of whom were lost, leaving him only the one boy who had gone with him. The bees he tried to save were also lost, since the flood reached unexpected proportions. Our sympathy is with this bereaved beekeeper in the loss he has sustained.

OUR OWN LOSSES ALSO HEAVY.

The Brazos River flood, the highest in history, made toys of seven of our eleven apiaries located on the large plantations of this rich river valley. Although the hives were located on high, heavily constructed scaffolds, out of danger of any previous floods, the water, which was 14 feet at most of the locations, swept away every thing.

Our new two-story ironclad honey-house, workshop, and warehouse, 28 by 36 ft., our

manager's residence, a neat city-style home, barn, and all other out-houses, went along also, together with several carloads of supplies, all of our equipment, including wagons and buggies. The two horses, a valuable cow, hogs, and poultry were all drowned, and the entire place left in ruin.

Our manager of apiaries, Mr. H. L. Russell, who has been a most faithful assistant for nearly four years, was with me at New Braunfels, for a few days, making plans for the next year, when the news of the high water came. He started back immediately, requiring almost a week to make the journey, walking the biggest part of the way through flood-swept territory. He had left his family and other relatives at home; and the reader can imagine the frenzied anxiety that possessed him. He had learned that every thing was washed away; but he could not ascertain in any manner the whereabouts of his loved ones from whom he was separated. After reaching there he was only able to find that they had escaped by means of boats they constructed after the water came, and were safe somewhere in an adjoining county. All communication being cut off, it was impossible to locate them, however; and although two weeks have elapsed, he is still separated from his family, and neither do they know his whereabouts.

I am writing this on my way to the stricken district and to these good people who have suffered so much. Although our loss is from \$10,000 to \$12,000, I have given it little thought, because, uppermost in my mind, has been the welfare of these faithful persons; and while I am making slow headway from one halting-place to the next, over the miles and miles of ruined tracks, just replaced to let the first trains pass after more than two weeks of suspended traffic, my anxiety to reach our now ruined former fields of operations is the greater. Although we have lost heavily, Mr. Russell has lost all of his belongings in this terrible flood except the clothes worn by him. But we know that the faithful will receive their reward; and this happy thought is exemplified by the fact in this case that a number of good friends who remembered the Russell family from a few months' residence in my employ at New Braunfels, before Mr. Russell was placed in charge of the apiaries in the Brazos River Valley, have placed in my care a large trunkful of warm clothes that I am to deliver to them upon reaching my destination.

Beekeeping in California

P. C. CHADWICK, Redlands, Cal.

DOES HONEY FROM THE SAME PLANT VARY?

It seems that I am almost alone in my views on the color of honey from the same plant. That part does not bother me as much as do some of the arguments used to prove that I am wrong. Some are not only claiming a difference in the color of honey from the same plant, but have gone further by saying there is also a difference in the body and flavor. No doubt this will be of great advantage to those who have an inferior grade of honey, for they can choose a fancy name and thereby augment the sales of their crop; but it is hardly necessary to state that the true article from which they have borrowed the name must in time suffer. But, according to the trend of the discussion at the present time, they will have quite an array of argument to sustain them. In that case the name white clover, basswood, buckwheat, sage, orange, etc., will mean absolutely nothing. We have a prominent beekeeper in California who was also long a producer in New York, who says that he has seen the early flow from cultivated buckwheat so light that it could not be told from white clover by sight. He also contends for the difference in color of sage, according to the soil and elevation.

I wish to review briefly Mr. Wesley Foster's argument on p. 838, Dec. 1. I agree that plants are constantly undergoing a change; but I contend that it is not an overnight change. Mr. Foster has the following to say: "The various honeys such as alfalfa, orange, white clover, and basswood, however, *approximate* a certain definite standard." Yet in the Imperial Valley of California we are told that alfalfa runs as low in color as dark amber. Buckwheat in New York as light as white clover, and white clover in New York as dark as buckwheat! Where are we at? Mr. Foster also says. "It is an accepted fact that the climate has an effect on the color of people's skins, hair, eyes, etc. People on the Pacific coast have a different complexion from those in the Rocky Mountain region." Yet in Germany we find light-haired blue-eyed people, while just across the line in France we find them dark-haired and black-eyed. So far as the complexion of people here on the coast being any different from those of the Rocky Mountains is concerned, that is a fallacy.

I had many talks on this color proposition while at the California State convention, for I was the target that several people wanted to shoot at. Nine out of ten agreed that, the heavier the flow from a source, the

lighter the honey. That was my original contention, that we obtain only the *pure* nectar from any flower when it is yielding bountifully; at other times it can not be judged as pure, from the fact that other plants are yielding enough to change the color. Take the button sage, for example. No amount of preaching can make me believe that it is not water-white in its purity, for I have studied this flora for ten years under all conditions; yet there are some years when we get the pure water-white grade, though most of the nectar is from that source. The button sage, under the influence of warm sunny weather, will yield a perfect stream of nectar, so to speak, while a dark, cloudy, cool day will cause the wild alfalfa to yield more and the sage less; then the bees go to the wild alfalfa, and within the period of a few days will often color an extracting of sage honey until it reaches the light-amber class. Strictly speaking, it is not sage honey, yet it contains only sufficient wild alfalfa to throw it off color for a strictly sage product.

A gentleman from Nevada told me that I was mistaken on the color of alfalfa honey—that it varies from white to light amber, the white being secured when there is a heavy flow on, and becoming darker as the flow becomes lighter. I asked him if he was sure his bees were getting *only* alfalfa in the light flow. He admitted that he was not.

In a recent issue of the *Western Honeybee*, "Honey-plants of California" was quoted at some length to break down my arguments; one of the quotations given there I am quoting here: "Page 1017. Mint family. *Marrubium vulgare* L; horehound. Common weeds of old fields and waste places about farms and villages everywhere in the Coast Ranges, Sacramento, and the San Joaquin valleys and Southern California. Evergreen with us; season May to September. A splendid yielder of dark-amber honey too strong and dark for table use, but is used largely in medicine. The honey is reported by some Ventura County beekeepers to be of a *light color with a greenish tinge*" (my italics). "It is, however, *probably wild-alfalfa honey* with a slight addition of horehound, as the latter is very aromatic." The facts in the matter are what we are after and what we should have. We should also know if all honeys vary according to soil and climate, and to what extent; for if it can be proven that sage honey is at times a light amber I must apologize to a firm of western buyers who quoted light-amber sage.

Conversations with Doolittle

At Borodino, New York.

SOME QUESTIONS ANSWERED.

"What is your experience with raw or boiled linseed oil for coating hives? Would it not be better than paint? Don't your hives get water-soaked without paint or oil?"

Answer.—I have never used clear linseed oil on wood surfaces, but I do not see why it should be better than paint. To paint hives properly, or any thing else, the first coat should always be mainly oil and a very little white lead, or whatever is used to thicken the oil. Thin oil penetrates the wood instead of being absorbed by the pigment used; and when it hardens, it largely prevents moisture passing through the pores. Some seem to think that the propolis which the bees use on the inside of the hive has the same effect as does oil or paint; but this is a mistake, as the thin coating of propolis-varnish which the bees use in all places (excepting on rough surfaces) contracts, checks, or cracks to such a degree when cold weather comes on in the fall, or during cold nights, that it becomes sufficiently porous.

"If shade-boards such as I recommend are used, the sun does not shine on any part of the hive during the hottest part of the day. And any shade-board which will properly shield the hive from the sun will shield it from all storms as well, unless such storms are accompanied by extreme winds; and then the water will only be driven against the bottom part of the hives.

INDUCING LATE BROOD-REARING.

"My bees did not continue to rear brood as late the past fall as they generally do; consequently they went into winter quarters depleted in numbers, and I fear for the results next season. Is it possible to force bees to continue brood-rearing during the fall by feeding such colonies as are not inclined to do so?"

Answer.—It is quite generally supposed that late feeding will induce late breeding, and so it will; but when the laying of the queen has dwindled away the last of August or fore part of September, it takes time to get her started again. Even a natural flow of nectar from the fields, if of short duration, fails to produce brood-rearing after the queen has once stopped laying. Brood-rearing is never carried on during September or October, in this locality, to an extent equal to what it is in May and June, no matter how long feeding is continued, or how good the yield of nectar from the fields may be. And especially is this the case where the laying of the queen has once ceased, preparatory to the bees entering

upon a state of rest for the winter. But continued feeding will start up brood-rearing after a week or ten days have elapsed; and when once started again it will generally be kept up as long as the bees can comfortably take the food without becoming chilled. If we desire brood-rearing to continue into cold weather, it can be kept up well toward winter by feeding regularly each day, and in all cold snaps giving the feed as warm as can be borne by the hand. But after having colonies come out well the next spring, where no eggs were laid by the queen after August 10 to 20, I do not now worry about this matter of late brood-rearing as formerly. Very late breeding often results in prematurely wearing out the vitality of such bees as are of the right age to stand the rigors of winter the most successfully, and in such cases late brood-rearing is a detriment rather than a remedy.

PUTTING FOUNDATION IN BROOD-FRAMES.

"I wish to fill my frames for the brood-chamber of the hives with foundation this winter; but when nailing them up I did not know that it was necessary to have a saw-kerf cut in the under side of the top-bar in order to hold the foundation. What would you do in such a case?"

Answer.—In all the frames I have made during my 40 odd years of beekeeping life I have never used a saw-kerf in one of them. nor do I consider it necessary. Proceed as follows: Upon a board slightly larger than the frame fasten another board, just large enough to slip into the frame easily, and scant half as thick as the top-bar is wide. Put the frame over this "form," then lay on the foundation with its straight edge or side close against the under side of the top-bar. It is well to have a handle of some kind on the under side of the first-named board, when, by holding the whole firmly in the left hand, you can pour from a tablespoon into the angle between the top-bar and the foundation a teaspoonful, or such a matter, of melted wax; and by holding the form in such a way that the melted material will run quickly from one end of the foundation to the other, the same can be fastened in the frame as securely and as perfectly as by any other process. When I first used this plan I turned the frame over and fastened the other side in the same way. But years of fastening only one side has proven that this is not necessary. Keep a vessel of the wax warm over a lamp or in some other convenient way. I use this method even when the frames are well wired.

General Correspondence

THE ECONOMICS OF THE NEW METHODS OF REQUEENING

BY ARTHUR C. MILLER

The editor's kind remarks appended to my article on "Requeening without Dequeening," p. 851, Dec. 1, are encouraging and at the same time suggestive. They suggested to me the fact that the economic importance of this new method as well as that of direct introduction by the smoke plan is being overlooked. Furthermore, the economics of honey production are being sadly neglected. To be sure, a stray item now and then alludes to cost of some process or suggests some saving, but they mostly have to do with the price of supplies, not with the labor, the operative cost.

From the best figures I have been able to obtain, the direct loss of queens put in by the cage plan is about forty per cent, to say nothing of the subsequent loss of maimed and injured queens which occurs later. But not a word is said as to the loss in labor in the several inspections of the colony, nor is more than a passing remark given to the loss from having the colony queenless for three to six or often more days. Then there are those colonies which persistently refuse to accept a queen, sometimes dwindling until they are of no value save to unite with some other colony. By the smoke method of introduction such loss is cut out, nearly one hundred per cent of the queens being accepted, and that immediately on the removal of the old queen. So certain are the results that it is unnecessary to inspect the colony afterward to see if the queen is safe. The aggregate saving throughout the country in cost of queens alone is immense; and if the labor item could be figured it would astound us.

By "Requeening Without Dequeening" we save the labor (costly time) of finding the old queen. If we raise our own queens and raise as many of them as we had to when introducing by the cage method, we can save almost all of that time and thus be far ahead of the cage plan. All that is necessary is to run in the new queen at the proper time, and the next morning look for a dead queen in front of the hive. Occasionally it is the second day before she is thrown out, and now and then longer; but even so, it takes very little time to walk along before the hives and look for a dead queen. They are readily seen, usually having a few workers "nosing" them over. If a system of clipping queens reared one year one way,

say (for example) the left wings, and those of the next year having the right wings clipped, there is never any question as to which queen is thrown out. The veteran can readily distinguish between an old and a young queen; but sometimes the bees have been doing a little superseding unbeknown to the beekeeper, and a young laying queen is thrown out. Clipped wings make identity positive.

I have said, "If we raise as many queens as we had to when using the cage method of introduction." By that method we lost about forty per cent outright, which meant that, out of 100 queens, only 60 are accepted; hence 40 more must be reared to take their place; and if about 40 per cent of those forty are lost twenty or twenty-five more are needed. In other words, under the cage system about twice as many queens had to be raised as were needed, and I have known beekeepers to raise over three times as many, because of the loss of virgins both in introduction and in mating. Just stop and figure the cost of that! Divide it by the number of your colonies and see how much it adds to the cost of your honey per colony and thence per pound.

The reason I said raise as many queens as when operating by the cage method is because my loss when requeening without dequeening is about the same as by the cage method. But I save the expense and annoyance of looking for the old queen and removing her, and all of the queens accepted are "sound in wind and limb," which is not the case by the cage plan.

In the article above alluded to I said (p. 851) that where the queens were supposedly equally matched the bees sometimes took a hand. So far as I have been able to find out, the bees never meddle with either queen unless one runs—and perhaps "pipes"—then balling usually follows. Either queen may do the running.

One item in running queens into colonies having a queen may be an important factor in the results, and it may not; and that is *where* she is run in, whether at one or the other side or in the middle of the entrance. Suppose she is put in at one side and the old queen is at the opposite side, and they do not meet for several days, as may occur; then the new queen has filled up with eggs, and has not the advantage over the old queen which we desire. Also, the old queen may have cut down egg-laying either from age, for a resting-spell, or preparatory to swarming, and thus have a still further advantage over the new comer. These are some of the

things to which I referred when I said I had not determined some factors to my satisfaction.

A little history in connection with this latest thing in requeening will, I believe, be of interest at this time. Some twenty or more years ago Dr. C. C. Miller experimented with putting in ripe cells to cause forced supersedure and for the prevention of swarming. I am not sure that he was the first to try that, but I do know that subsequently others, including myself, tried it, and also used virgin queens. The results were far from satisfactory, though Mr. Davenport, I believe, experimented with the same thing and is understood to have had less loss than the rest of us. The use of virgins or cells I believed was economically a mistake; and for that reason, and because of the small success, I abandoned their use, and turned to the use of young laying queens. The change proved wise, and brought success.

Now comes in another bit of history of particular interest to Mr. Allen Latham and myself. For years before we became acquainted we found ourselves working out the same problems and arriving at the same solutions. As time went on we got to comparing notes; and when we failed to agree I always, and I think he generally, went over the problem again and most carefully. In other words, when he agrees with me I feel sure that I am right; and when he does not, I dig for facts to prove one or the other of us wrong. We have had many a long and interesting discussion of sundry matters pertaining to bee culture, and frequently remarked on the interesting fact of our so often tackling the same question and arriving at the same conclusion, each without the knowledge of what the other was doing. One day I asked him why he had been *following* me all these years? For an instant he sort o' gasped; then, catching the twinkle in my eye, he came back with one of his knock-out retorts. Look out for him.

Well, we have both been working on this problem of requeening without dequeening, he with cells and virgins, and I with those and (later) with laying queens. Neither of us said aught to the other of what he was up to, though he told me he was at work on something which he considered of great promise. When I decided to publish what I did I wrote to him for his opinion; and, lo and behold! we again had been working at the same problem. When I say that we agree in believing it one of the most important advances in modern bee culture, and also agree in believing that we will soon make the results as uniform and as certain as

they now are in the smoke method of introducing to queenless colonies, the beekeepers may be assured that they are not chasing any will-o'-the-wisp in following it up.

And this reminds me of a phase of the subject which deeply interested both of us, namely, the requeening of colonies in trees, boxes, and box hives, where the owners for sundry reasons do not want their property disturbed, and where the cost of getting out and transferring the bees is prohibitory. The displacing of black stock under such conditions with good disease-resisting Italians means more than at first thought appears.

Providence, R. I.

BEEKEEPING IN BRITISH COLUMBIA

The Bureau Hive for the Peculiar Weather Conditions

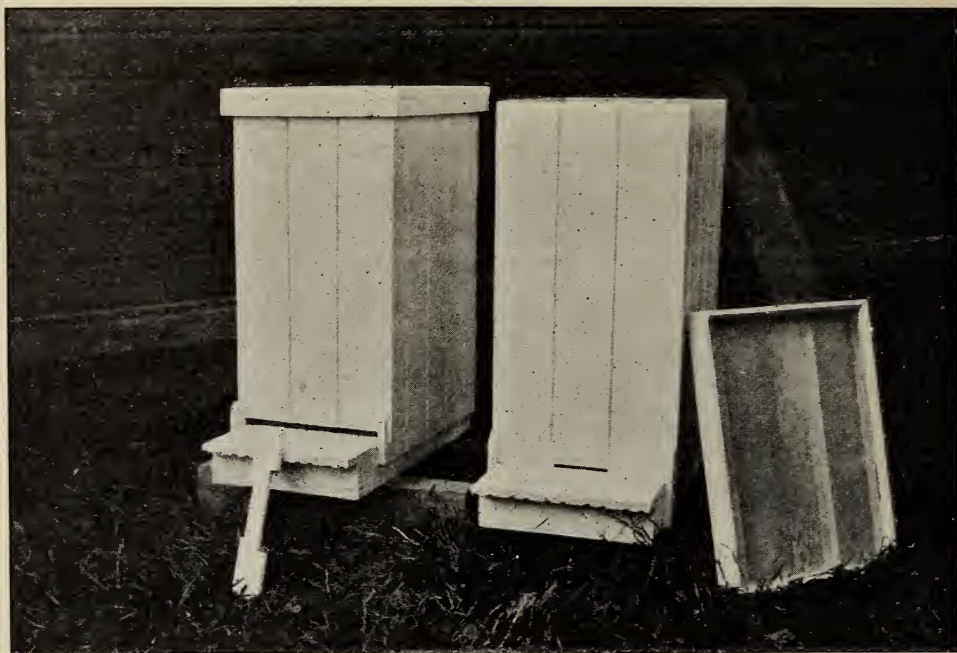
BY F. DUNDAS TODD

Unlike ancient Gaul, which, as schoolboys, we learned was divided into three parts, the big Province of British Columbia is popularly divided into two, generally known as the wet and dry belts. The section of the province under my care as a bee-inspector and instructor in apiculture lies in the wettest part of the province.

Generally speaking, beekeeping is carried on by the let-alone plan. Under my supervision are at least three thousand hives cared for in every conceivable way, and uncared for in ways that are inconceivable. Again and again I have wondered exceedingly how, with such awful lack of protection, a few hundred bees could survive a winter where the thermometer would drop to ten degrees below zero, and where often steady rainfall for days would soak every inch of comb, especially when the most favorable conditions of protection and food supply often result in the extinction of the colony. Some day I may tell my readers some of my experiences and some of the conclusions about wintering I have reached.

Our springs begin along in March, and not infrequently dawdle along in most exasperating fashion until near the end of June. Our nights are always cool, excepting for a few days in the height of summer, and even at their worst they are far from being unpleasant.

Brood-rearing begins in March. In a favorable season an eight-frame hive will be packed with brood by the end of April. At that time a second brood-chamber may be given, and by the first of June both stories will be crammed with bees and brood. I have seen both chambers of a ten-frame hive crowded with bees on April 20.



Front view of Todd's bureau hives modeled after the hive described by Samuel Simmins in a "Modern Bee Farm."

There is another side. A colony the least bit below par will dawdle along in a cold spring until about the beginning of the honey-flow, and then give up the ghost. Last spring (1913) was the worst in twenty years, and it makes my heart sore to open up, as late as the last week of May, hive after hive the whole day long only to find a few hundred bees and a poor queen which is industriously doing her task and laying as many as a dozen eggs in every cell covered by the bees.

For several years I have pondered much on the problems of temperature and damp. I have seen and handled many kinds of covers and hives, but it would appear to be almost impossible to design one that will be waterproof in the valley of the Lower Fraser. Bit by bit I have come to be of the opinion that the real solution will be found in the use of a bureau hive on the lines of the one outlined by Mr. Simmins in his "Modern Bee Farm." I dare say many readers of this journal have wished that Mr. Simmins had given specifications of the bureau; and since I have worked out the details for myself, made one with my own hands, and supervised the making of three by a first-class carpenter, I am in position to give definite data.

My duties keep me all summer a hundred miles and more from my own apiary, so I have been unable to make comparative tests,

but I have learned a few of its merits. For instance, it will not permit bees to fly out in a warm day with snow on the ground. Such a condition occurred in my territory last winter, and many beekeepers assured me that the snow was literally black with bees. Much of the terrible spring dwindling this season was doubtless started by this cause. I have also learned that it is a good wintering hive, and one in which brood-rearing advances very rapidly in the spring.

The general idea of the bureau hive is to provide an absolutely waterproof shelter for bees, and one in which an air-space surrounds the hive-bodies and so tends to a uniform temperature in the colony. It is also a handy hive to work, as any hive body can be withdrawn for examination without disturbing the others. Furthermore, as all handling is done at the rear of the bureau, any bees that rise from the combs at once fly to the entrance, and so the beekeeper is not annoyed by their buzzing about his person.

My bureaus are made from 4-inch tongue-and-groove lumber smoothed on both sides. A little over 100 lineal feet of this wood is required for each house.

The specifications that follow are for a hive whose outside measurements are $13\frac{7}{8} \times 19\frac{3}{4}$. They will have to be modified a little for a different size.

Platform is $15\frac{1}{2} \times 31\frac{1}{4}$; sides are $23\frac{3}{4} \times 35$;



Back view of the hives, showing one of the back pieces removed and the middle story pulled out.

front is $15\frac{1}{2} \times 32$; back is $15\frac{1}{2} \times 35$; inside of cover, which is of the telescope variety, is $17 \times 23\frac{1}{4}$.

Bill of goods for one bureau:

Lumber, 120 lineal feet of 4-inch tongue and groove, smooth on both sides.

$\frac{3}{4}$ -inch square wood, 30 lineal feet.

Screws, 5 dozen $1\frac{3}{4}$ -inch steel.

Screws, 1 dozen $1\frac{3}{4}$ -inch brass.

Roof, canvas or galvanized iron.

The hive-bodies are carried on runners attached to the sides of the bureau. The bee-space of $\frac{3}{8}$ inch between sets of frames is determined by the distance between the runners, hence the hive-bodies are made of the same depth as the frames—that is, $9\frac{1}{8}$ inches. To put it another way, when the frames are hanging in the hive-body, both upper and under surfaces are flush with the corresponding edges of the hive.

We therefore start out by reducing the height of the hive bodies to be used to the proper size, then along the upper edge of the long sides we fasten with screws a pair of cleats $\frac{3}{4} \times \frac{3}{4} \times 19\frac{1}{2}$. These cleats carry the hives on runners attached to the sides of the bureau.

The upper surface of the hive-body now under consideration will be $15\frac{1}{2}$ inches across. Allowing $\frac{1}{8}$ inch for play we arrive at $15\frac{1}{2}$ inches as the inside width of the bureau.

As the sides of the bureau are nailed to the sides of the platform it is better to begin with the latter. The upper boards are fastened to a frame made of $1\frac{3}{4} \times 3\frac{3}{4}$ wood set on the narrow edge. The side pieces are 32 inches long, the cross-pieces 12. In nailing the parts together the front cross-piece is set flush with the ends of the side pieces, but the back cross-piece is set in $\frac{3}{4}$ inch. This frame should be exactly $15\frac{1}{2}$ inches wide.

The platform is made $15\frac{1}{2} \times 31\frac{1}{4}$. Both in front and back it is flush with the cross-pieces of the frame.

The sides of the bureau are $23\frac{3}{4} \times 35$. Once the pieces are fitted together and trued up, draw four

lines across at the following distances from one end: 2 inches, $11\frac{1}{8}$, $20\frac{1}{8}$, $30\frac{1}{8}$. The two-inch line marks the point of contact with the upper edge of the platform. It is advisable to nail a $\frac{3}{4}$ -inch-square cleat along this line, to rest on the platform. It is especially helpful when the sides are being fitted. The other three lines mark the upper edge of the runners on which the hive-bodies are carried. These runners are $\frac{3}{4} \times \frac{3}{4} \times 22\frac{1}{4}$ inches long. When in position they leave a blank space of $\frac{3}{4}$ inch at each end. The front and back will butt tight against the ends of the cleats. At this stage it is wisdom to make all fastenings with finishing nails, but for permanency screws should be used, as a heavy weight will have to be carried by these runners.

The front board is $15\frac{1}{2} \times 32$. Across it draw three lines, one $9\frac{1}{8}$, one $18\frac{1}{8}$, one $28\frac{1}{8}$ inches from what is to be the bottom edge of the board. These lines mark the upper edge of the $\frac{3}{4}$ cleats, cleats against which the end of the hive will strike when in position in the bureau. The top edge of the cleat will be flush with the top surface of the hive-body. To avoid mashing bees when the hive is run home it is better to have a couple of screws projecting a trifle less than $\frac{1}{8}$ inch from the face of the cleats on the front board. It is well to nail a binding cleat of $\frac{3}{4}$ -inch wood along the lower edge of the front board. All cleats are $\frac{3}{4} \times \frac{3}{4} \times 15\frac{1}{2}$ inches.

The back board is $15\frac{1}{2} \times 35$. Across it are drawn four lines, one 2 inches from the bottom end, one $12\frac{1}{8}$, one $21\frac{1}{8}$, and one $31\frac{1}{8}$ inches. The two-inch line marks the lower edge of the fastening-block, which must be strong, say $1 \times 2 \times 15\frac{1}{2}$. The other lines correspond with those on the front board, and mark the upper edge of the cleats $\frac{3}{4} \times \frac{3}{4} \times 15\frac{1}{2}$.

We are now ready to assemble the body of the bureau. First, put the sides in position, the back edge flush with the ends of the projecting sides of the bottom-board, the lower cleats resting on the platform. Fasten temporarily with finishing nails. Next comes the front board. The entrance is to be

exactly one inch high. To make sure of getting the height correct, place a block the proper thickness under the front board. If construction has been carefully done the cleats on the front board will rest snugly on the runner cleats on the side boards. Fasten with finishing nails. When the back is slipped into place it will be found that the projecting ends of the foundation frame will prevent its going home, so pieces to correspond with these ends must be cut out of the back board. These will be about $1\frac{1}{4} \times 1\frac{1}{8}$.

The lower end of the back board is held in place by iron dowels that project from the surface of the bottom-board and about 4 inches from each end. Drill fastening-block. The dowels are easily made by cutting off from a couple of four-inch wire nails pieces $2\frac{1}{2}$ inches long, measuring from the point. The position of each is $\frac{1}{2}$ inch from the edge of the bottom-board and about 4 inches from each end. Drill holes for them, then insert the blunt end and drive home, leaving $\frac{1}{2}$ inch projecting. Replace the back board and force it down upon the points of the nails so as to mark the position of the holes. Drill these.

The cover may now be made. The telescope sides, if the cover is a tight fit, will draw all parts of the bureau tightly together; hence it is better to make the roof first, the exact size being the outside dimensions of the bureau—that is, $17\frac{1}{4} \times 23\frac{3}{4}$ inches. The side pieces of the cover are made of $\frac{3}{4} \times 2\frac{1}{2}$ -inch wood, and are best made with a miter joint. To insure easy fitting it is advisable to chamfer the inside lower edge.

To make the roof perfectly water-tight it should be covered with a zinc or galvanized iron roof, or with canvas to which are applied three coats of paint.

The entrance block is $\frac{3}{4} \times 3 \times 17$. On one side is a cut-out $\frac{3}{8} \times 5$; on the other, $\frac{3}{4} \times 8$. We thus have a choice of three different sizes of entrances. In addition, by the use of blocks of wood we can contract as much as we please.

To hold the blocks in position, put lugs on the sides of the hive, the size being $\frac{3}{4} \times 2 \times 6$. Cut out a space $\frac{3}{4} \times 3$ to permit the entrance block to fit in.

By slipping the hive bodies into place, one can test the accuracy of the construction. There ought to be a $\frac{3}{8}$ -inch space between each hive-body. The front and back cleats should be flush with the top of the hive opposite. The lower hive should be even with the lower edge of the front board.

When fitting is perfect, remove all pieces and fasten all cleats and runners in place with $1\frac{1}{8}$ -inch screws, not forgetting the projecting screws on the front board cleats.

The permanent fastening of the sides and front board is best done with brass screws, as they are not liable to rust.

The above design is suitable for extracting; but by changing the position of the upper runners and cleats it can be made available for section honey.

The quilt should be $15\frac{1}{2} \times 19\frac{3}{4}$. Plenty of room is given above the uppermost hive for piling on lots of old sacking to retain the warmth. On very hot days upward ventilation is secured by turning back the rear end of the quilt and prying up the cover a little.

To preserve the woodwork of the foundation frame it is advisable to set the bureau on cross-pieces of lumber.

The three hives I had made early in June are now in the care of three beekeepers in my territory. British Columbia readers may be interested to know where they are locat-

ed. One is at the experiment farm at Agassiz; one is under the care of Wilfred Smith, of Dewdney; the third is in the apiary of John Reagh, Ladner. The latter is a beekeeper of twenty years' experience who successfully manages a back-yard apiary of about 40 colonies in a very tricky locality. Wilfred Smith is a young man of twenty-one who last year took over the home apiary of thirty colonies that had been moderately neglected, and beat his dad out of his boots, much to dad's delight. The superintendent of the experiment farm is keenly interested in bees, but, unfortunately, is overwhelmed with the care of many things, and so has too often to attend to the bees at odd moments. But somehow I feel that the very variety in the conditions will be all the better for the test. All have one condition in common—cool nights and plenty of rainfall.

On July 28 Wilfred Smith reported, "For the coast district it looks as if the hive is perfection itself. It does not seem to be affected by rapid changes of temperature such as cold nights after a warm day. The bees never hang out in front, no matter how hot the weather. (This, by the way, is my own experience, so far as I have had opportunity to notice.) Brood-rearing never ceases, and is reared right up to the outside walls of the hive body. In a single-walled ten-frame hive, you know, the two outside frames generally contain no brood. In an eight the inner surface of the second frame is used for brood."

The real test will be the wintering and springing. The results I should be able to report by July.

Victoria, B. C.

REPORT OF THE MICHIGAN BEE-KEEPERS' CONVENTION HELD AT DETROIT, DEC. 10, 11, 1913

BY G. A. OFFINEER

The convention was opened by a very pleasing address by President Jenner E. Morse, of Saginaw, in which he welcomed the beekeepers at the convention, and brought forward in a very prominent way the advantages of the friendly spirit which should exist between beekeepers.

He was followed by an address, "The Production and Sale of Comb Honey," by Mr. Leonard Griggs, of Flint, Mich., who spoke at length on the production of honey, both comb and extracted. He advocated the use of the double-walled hive for the wintering of bees, and also for the production of honey, both comb and extracted. He ships all of his honey by freight, packing the comb honey in the regular way and the



Colony belonging to H. F. Edsall, Hammonton, N. J., that filled in 1913 seven supers, making a total of 224 4 x 5 sections. That's going some.

extracted in 60-pound tin cans. He favored selling to the wholesaler in preference to the commission man, or direct to the retail trade. During his speech he said that he expects to buy a power extractor and to increase the number of his apiaries so that he can produce much more honey than he did this season, this season's production amounting to 35,000 lbs.

"The Relation of Beekeepers and the Fruit-grower" was presented by Mr. R. H. Pettit, of Lansing, Mich., professor of Entomology in the Michigan Agricultural College. With the aid of lantern slides he brought before the convention the benefit to fruit-growers by having bees in their neighborhood. His talk was followed by a question-box, in which the whole convention took part in a general discussion of the topic.

The evening session was opened by an address by Mr. E. B. Tyrrell, Detroit, Secretary of the National Beekeepers' Association, on "Imagination as Applied to the Bee Business." Mr. Tyrrell mentioned the instance of the Root Company sending bees to Florida as being the result of some one's imagination being put to the test for the benefit of the beekeeping industry.

Mr. J. Pomeroy Munson, of Grand Rapids, President of the Michigan State Horticultural Society, spoke on "The Relation between the Fruit-grower and the Beekeeper,"

and dwelt largely on the subject of bees being poisoned by spraying, and also on the so-called danger of bees spoiling ripe fruit.

Prof. F. E. Millen, of Lansing, State Inspector of Apiaries, gave a long talk on "Foul Brood of Different Kinds, and Method of Treatment," covering the subject very thoroughly, and answering the many questions asked him. He urged the co-operation of every beekeeper, and the assistance of every person to help get control of the disease in Michigan.

Mr. A. G. Woodman, of Grand Rapids, gave an attractive demonstration of a new machine for fastening foundation in sections, which seemed to interest many members, the machine putting starters in both top and bottom, and folding the sections in one operation.

Thursday's meeting was opened with an address by Prof. Morley Pettit, Guelph, Ontario, of the Ontario Agricultural College, and also Secretary of the Ontario Beekeepers' Association. His address dwelt largely on the relation of the different associations in beekeeping, on how to procure new members, and on the bee industry or the development of the bee industry in general. His address was received with much applause, and many questions were asked.

The subject of "Wintering Bees in the Cellar" was thoroughly discussed by Mr. David Running, of Filion. He is vice-presi-

dent of the Michigan Beekeepers' Association. He discussed the subject very thoroughly from the conditions in his own locality and those of his own apiary, answering many questions on the wintering proposition.

Mr. Ira B. Bartlett, of East Jordan, who was to speak on "Wintering Bees on Summer Stands," was absent, and a paper on the subject was read by the Secretary.

"How to Manage 500 Colonies for Extracted Honey with the Least Labor" was the subject of an address by Mr. C. P. Dadant, Hamilton, Ill. His talk was very pleasing, and he answered the many questions asked him on the production of extracted honey, in a thorough manner.

The afternoon session, which was the closing session of the meeting, was given mostly to business of the Association and the election of new officers. By a unanimous vote of the convention the Secretary, Mr. O. H. Schmidt, Bay City, was instructed to cast the vote re-electing the entire list of officers of the previous year. It also elected the President, Mr. Jenner E. Morse, as the next delegate to the National Association, and the place of the next Michigan convention is Lansing, at the Agricultural College.

FITTING SUPERS TO ODD-SIZED FRAMES

BY R. F. HOLTERMANN

There are two distinct classes of beekeepers. Those in one class have every frame in the apiary the same size, and even of the same make, the brood-chambers uniform, and the upper stories of the same capacity and size. By that I mean the frames are not only of the Langstroth dimensions, but they are all either Hoffman, staple-spaced, or not self-spacing at all.

On the other hand, the beekeepers of the other class buy almost any thing which is a beehive, not because the bees are in good shape and they get them at the right price, and intend to put them into other hives as soon as time or perhaps even money will permit, but because a hive is a hive, and the matter of uniformity or interchangeableness does not enter into their calculation. Those of the latter class never make much headway in beekeeping.

To the first class I aim to belong; *but* I have bought a good many colonies of bees, and in that way have many frames which, while of the Langstroth type, are not staple-spaced, but spaced by the Hoffman method, and some are not self-spaced at all. Unless a colony has crooked combs or lack of time does not permit transferring, I aim to get

every one into the twelve-frame Langstroth hive soon after buying. However, there have been times when I have had to fit a super upon a hive which did not fit it for perhaps either length or width, and necessity has schooled me to do this with a very fair amount of success.

If a hive is not wide enough for the super, the queen-excluder can be made to stick over on each side (the width of the rim is generally $\frac{7}{8}$ inch), or a cleat can be tacked on each side of the hive. The same can be done at the front of the hive. The difficulty here is with the cover; and the only way out of this is to take some roofing-paper, tack it on a rim, and put the previous cover on top of this. At the season of the year when supers are on, this answers fairly well.

Brantford, Canada.

ISLE-OF-WIGHT DISEASE ABATING

A Criticism of Some of the Statements Made by Joseph Tinsely in the Sept. 15th Issue

BY JOHN SMALLWOOD

Mr. Tinsely's experiences, p. 647, Sept. 15, are so diametrically opposed to those of others and to my own that I feel compelled (lest there should be any mistake) in default of some one better to take up the cudgel myself and dispute them. But first let me say that the rock-bottom and exhaustive authority on this question is the Report of the Board of Agriculture (price 1 shilling, post free, from the Board); and as there is a revision of it published this year it is the last word on the subject.

Let us notice especially the first paragraph of your correspondent's letter. Writing of the disease he remarks, "It shows no sign of abating." It is evident the writer either is too careless or else has not taken the trouble to acquaint himself with the truth.

Unquestionably during this current year the scourge *has* much abated. Better climatic conditions, an abundant yield, and also probably because the weak colonies have been wiped out, are the possible reasons for the improvement. I should very much have liked to give official statistics; but as there are none published, this is impossible. I must, therefore, prove my assertion from other sources.

As expert (or inspector) for two counties, Oxford and Middlesex, the latter of which lost 80 per cent of the colonies in 1910-11, my personal visits to our subscribers have occupied me from the early spring until the date at which I am writing. I have found very few new cases; in some instances even the bees have seemed to cure themselves, and



Colony killed by Isle-of-Wight disease.

unquestionably the colonies compare favorably with the two previous years.

And I have other interesting evidence. When the pestilence was at its height, every morning the *British Bee Journal* received quite a consignment of samples of dead bees on which to adjudicate the cause of their demise—a kind of coroner's inquest. Now, the *Bee Journal* informs me, very few are sent; further, callers and correspondents from all parts of the kingdom write and speak of the abatement of the disease and the marked improvement. I think, therefore, we may comfort ourselves very reasonably with the hope that we are through with one of those cycles of years in which this disease appears. In no way is your correspondent's statement true, that it shows no sign of abating.

London, Eng.

MORE ABOUT THE ISLE-OF-WIGHT DISEASE

BY W. HERROD
Junior Editor *British Bee Journal*

I notice on p. 647, Sept. 15, an article on the above by Joseph Tinsely which is most misleading. It is a pity that such canards should get into a paper of GLEANINGS' standard. Your correspondent is a little careless in what he says, nor does he take

the trouble to verify the statements made to him by others.

In the first place, his statement that "the disease shows no sign of abating" is entirely wrong. In my capacity as junior editor of the *British Bee Journal* I claim to have the best opportunity of any one in Great Britain for judging this, and I can assure you it is abating. In some districts it has disappeared altogether. Take, as an instance, the apiary at Swanley, which he mentions. This was attacked in 1910, but there has been no outbreak since then.

Right from the commencement of the disease, bees have succumbed from it in

winter as well as summer. He speaks of the bees "seizing small pieces of grass and weeds to raise themselves higher where they clustered in knots." Can anybody understand what he means? Fancy a knot of bees clustering on a blade of grass! What really happens is that the bees cluster in knots on the alighting-board and on the ground. His illustrations of dead bees, etc., are misleading. Similar ones could be taken at any time by any beekeeper. The pictures I send show diseased bees actually clustering on the alighting-board; a colony dead, and the staining of the outside of the hive, which occurs far more frequently than staining inside.

There is no conflict of opinion as to cures. A number of beekeepers are trying hard to find a remedy, and the rest are praying that they may be successful.

If your correspondent knew as I do the tremendous amount of work done by the Board of Agriculture he would not make the remarks he does. One thing they have proved conclusively is that the disease has been spread by careless and unscrupulous beekeepers, and they state it is impossible to stamp it out until a "Disease of Bees Act" is obtained. Your correspondent is one of those fighting against this being obtained, as will be seen from the following under his



Alighting-board of colony afflicted with Isle-of-Wight disease, showing the bees gathered together in knots.

name in the *Staffordshire Chronicle* of Aug. 2, 1913:

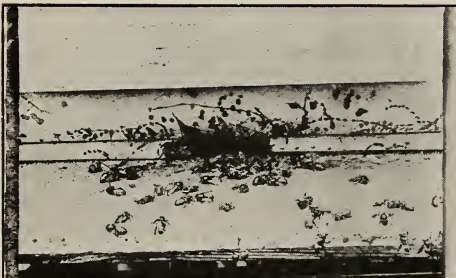
It is cause for congratulation that the Bee-disease Bill has been dropped this session.

Then to show how inconsistent he is, compare the following paragraph from the same paper with the article written in GLEANINGS:

To show the fallacy of hastening such legislation, it is now candidly admitted that in many cases of Isle-of-Wight disease, the bees will overcome the pest if given time; and I have also proved this with my many experiments. Had legislation been in existence, many excellent colonies would have been destroyed.

In two or three counties in England there has been such a wholesale destroying of colonies that it is not possible to raise a honey show this year and Warwickshire is one of them. One can not help but think that too much has been made of the disease, and that many stocks have been destroyed that had no Isle-of-Wight disease at all.

Now, any one with the slightest experience of Isle-of-Wight disease knows that, once a stock is attacked, it is doomed.



Entrance of a hive containing a colony afflicted with the Isle-of-Wight disease. Note the staining of the front of the hive.

His statement that Italian bees are not affected is as inaccurate as the rest of his remarks. There are not many Italian bees kept in Great Britain, so that it is difficult to make a comparison. The disease is no respecter of the race of bees, and I have had a number of specimens of Italian and Carniolan bees sent me which were badly affected.

He mentions one county where 500 colonies perished. I can tell him the number in that county is thousands and not hundreds, and also that his informant wrote in a contemporary in July, 1911, "I shall be able to go on and keep my bees and not let them die of disease as was the case at Swanley." That boast has not been fulfilled, as his apiary is among those wiped out in the county mentioned. It is the gross ignorance of people of this description which is the means of spreading disease in this country.

Then with regard to the queen he states that "it is a peculiarity of the disease she is the last to die," but gives no reason for this. Surely if he had studied the disease he should know. Neither queen nor brood is affected, because their food is given already digested, therefore it does not contain the germs of microsporidiosis which undigested food often does.

London, Eng.

LIQUEFYING GRANULATED HONEY

The Tops of the Cans Should Not be Submerged in Water

BY T. P. ROBINSON

The writer's attention was called to Mr. Louis H. Scholl's article on heating granulated honey to reliquefy it, in the Nov. 15th issue; and having had much experience in this work I have decided to offer a few remarks.

Mr. Scholl is right in his statement that honey should be heated slowly for best results, but painfully wrong when he tells us to submerge the cans in hot water and cover the top of the vat entirely. One great danger of inundation is that water is liable to creep in through the caps of the cans. The other is that of overheating the honey. I have heated something like 20,000 pounds of honey since August, and I think the matter of reliquefying honey a part of bee-keeping, just the same as any other part of the work, which is an absolute requisite in this part of the State with our cotton and horsemint honey.

My cauldrons or vats hold 12 five-gallon cans each, and I usually heat about 2000 pounds at one time. The cans are made

just as deep as the five-gallon cans are high plus one inch to accommodate wooden strips placed in the bottom of the vat on which to place the cans to prevent burning the honey. The water in the vat comes to a point one inch from the top. The vat is placed on brick six inches high, so as to have the fire flush against the bottom of the vat. When heating begins, the water is used as a thermometer. The water in the vat around the honey is heated to the temperature of hot dishwater, and held at this temperature. Presently the heated honey will begin to flow to the top of the can, allowing the granulated part to sink to the bottom of the can. This process of the heated honey rising and the solid parts going down continues until the whole mass is liquid. I heat the honey until it reaches about two-thirds the boiling-point. The cans are kept sealed tight all the while to retain the aroma of the honey. The stirring referred to by Mr. Scholl is unnecessary.

I reliquefy and redeem chunk comb honey by thus heating, and have as a result fine extracted honey with a nice cake of wax. I have used this method of reliquefying honey for 13 years, and it has been very satisfactory to myself and customers. I have yet to receive my first complaint.

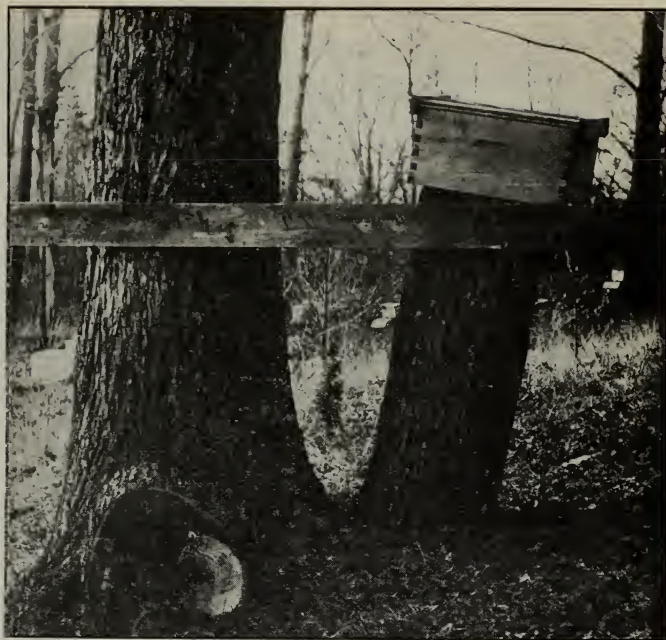
Bartlett, Texas.

A TREE HIVE

BY C. B. MORRIS

B. J. Mayo, of Metuchen, N. J., a bee-keeper of forty colonies, has an interesting specimen of bees in a tree-trunk that was obtained in November, 1913, at a cost of considerable trouble and labor.

The colony was discovered in the woods, about twenty-five feet from the ground, in a dead tree. An investigation proved the worth of both bees and honey, and on the following night the first steps toward gathering were made. The tree-trunk was sawed at



B. J. Mayo's tree hive, weighing, with the bees, in the neighborhood of 500 pounds.

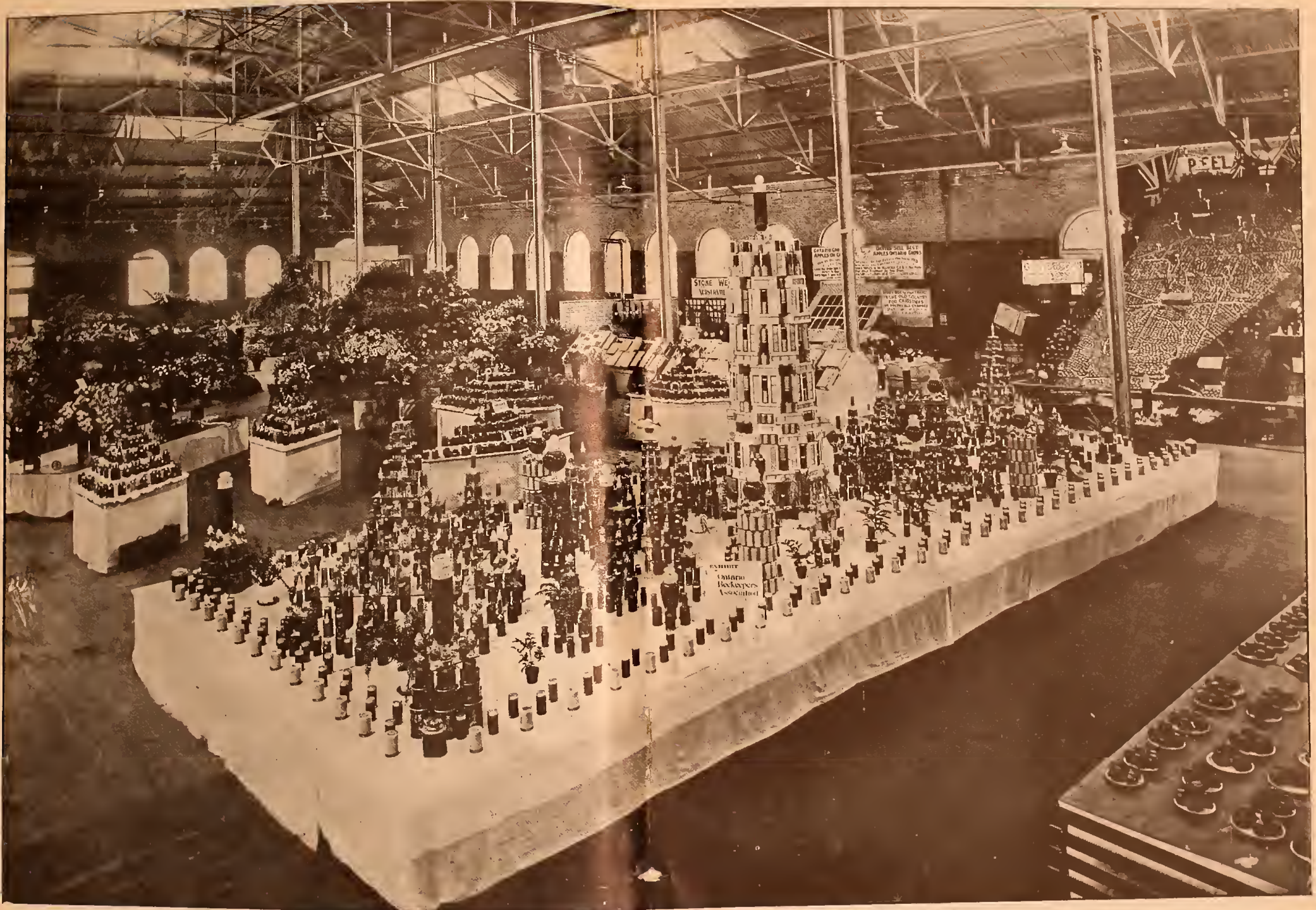
the point where the bottom of the combs was correctly judged to be, and allowed to fall over and down into a smaller one. The smaller one was cut, and allowed to fall into a still smaller one, and so on until four trees in all had been cut down. This permitted the lowering of the hive by degrees, and thus saved the otherwise 25-foot drop that would have resulted in an entire loss of bees.

As the bees were of the Italian breed, and not the common black kind that are so often found in the woods, it was an object to save them as well as to obtain their honey.

The top half of the tree was larded safely, and the extent of the colony judged to be 51 inches upward from the bottom cut. This estimate proved to be wrong, as the saw passed through the combs, leaving about a quarter of them still in the top. The smaller portion was then cut off, and, with the larger one, placed in a wagon and taken to Mr. Mayo's apiary.

The picture shows how the larger portion was made fast to a tree, the smaller one lying on its side empty.

It is the desire of Mr. Mayo to have the bees in the larger portion work their way up and into the hive on top, filled with the remains of extracted honey-combs, and then, under favorable conditions, remove the colony to a place where other hives of this pattern are located. Already this procedure



Ontario honey exhibit in Horticultural Building of the Toronto Exposition in November, 1913. See next page.



A portion of the apiary of B. J. Mayo, Metuchen, N. J. Mr. Mayo started three years ago with only five colonies. The cover picture for this issue shows Mr. Mayo and his son standing near the edge of their apiary.

has been successfully worked on the smaller portion, and the honey taken from it.

The hive as it now stands measures 51 inches in height, 58 in circumference, and is estimated to weigh 500 pounds.

Metuchen, N. J.

THE ONTARIO HONEY EXHIBIT AT THE HORTICULTURAL EXHIBITION, TORONTO

BY E. R. ROOT

Last year, in November, there was held in Toronto the usual horticultural exhibition and poultry and fat-stock show. But the thing that would interest the beekeeper particularly was a magnificent honey exhibit in the very center of the horticultural building, mounted on a large table. This exhibit was prepared under the direction of Mr. H. G. Sibbald, of Claude, Ontario, a director in the Ontario Beekeepers' Association, and one of the prominent and most successful beekeepers in the Province. When I say "successful" I mean that he is one of the largest producers of a fine table extracted honey on the continent. There are but very few men whose crops are larger, and certainly none who produce a finer honey. During the winter he changes his residence

to Toronto, where he looks after the selling of his crops.

When plans were made to have this horticultural exhibition, the beekeepers of the Province saw to it that their allied industry was properly represented. As we know that bees make more and better fruit possible, what could be more appropriate than that honey should be shown at this horticultural exhibition?

Perhaps the most striking thing in this whole exhibition hall, unless it be the Peel County exhibit of fruit opposite, was the Ontario beekeepers' honey exhibit as shown in the illustration preceding, occupying as it does the very center of the vast building.

Mr. Sibbald, though he had had no previous experience, or at least a very limited one, was prevailed on to take charge of and erect this exhibit. That he has the artistic sense so necessary in a work of this kind, I think will be agreed to by all who look at this picture. Instead of following the conventional lines of a blocky or massive display it will be noticed that he adopted a variety of schemes to set off the honey. The big tower in the very center of the exhibit, made up of comb honey and bottles of extracted, not too crowded, stands out in strong relief. The pyramids and smaller

towers are scattered here and there with small groups of honey in various parts. The effect with the open spaces is very pleasing.*

I have before spoken of the beautiful color and quality of Ontario clover honey. It comes as near being water-white as any honey I have ever seen, with one exception, and that is the guajilla of Texas. As every one knows, honey in a picture will take black; but if you can imagine these black bottles containing a very pale crystalline honey you can get something of an idea of the beauty of this exhibit. Of course, there were dark honeys, such as buckwheat, but the great mass of the display was made up of Ontario white clover.

By the way, our correspondent, Mr. Byer, on page 6 of our last issue, another large producer of fine honey, thinks I shall be taken to task for intimating that the whiteness of Ontario clover is due to thistle. We have no thistle in our clover honey on this side of the line; and in view of the fact that the Ontario product has something else in its flavor that is very pleasant, and lighter in color than our clover, I naturally concluded that thistle explained the difference. Nor did several of the Ontario beekeepers with whom I talked demur at the suggestion. Mr. O. L. Hershisier, one of the best judges of honey in the United States, and who was a judge of some honey at the Ontario convention, gave it as his opinion that there was a little thistle in much of the Ontario clover honey.

In our last issue, also page 6, our correspondent, Mr. Byer, could not refrain from commenting on the fact that a certain editor had been held up by a "cop" for stealing honey. Now that "the cat is out of the bag" I might as well "put on the shoe" and explain. I stood, very innocently, in front of this honey exhibit, as shown in the picture, while a good beekeeper kept me in close conversation. Whether there was any design on his part, I know not. I remember somebody bumped up against me, and a movement in or toward my overcoat pocket. As the occasion of the collision was my friend Charles E. Hopper, I did not feel to see what I missed—or in this case acquired. I merely supposed it was an accident, and let it go at that. Soon afterward a Canadian policeman, with an artificial sternness on his face, took hold of my arm and said, "So you are the chap who has been stealing some of this honey? I have caught you with the goods on you." Remembering that bump against my pocket I reached down and

found a bottle of honey. I immediately turned about and saw a twinkle in the eyes of Mr. Sibbald, Mr. Hopper, and, I think, of Mr. Byer. I turned to Mr. Policeman and said, "Those fellows over there have been stuffing my pockets."

"That is a very good story for *you* to tell," said he; "but you had better come along with me." By that time the assumed sternness on his face had broken into a smile, and a suppressed giggle was heard in the direction of my friends.

It seems that some of these bottles of honey, so easy of access, had been stolen, and the police had been instructed to keep a watch, and the first man he caught with the goods on him was the editor of GLEANINGS! Well, if I do not get into any worse scrape than this I shall count myself fortunate.

FIELD MEETING OF THE NEW JERSEY BEE-KEEPERS' ASSOCIATION

BY E. G. CARR

One of the best-attended meetings of the New Jersey Beekeepers' Association was held at the apiary of Geo. Grover, on June 25, there being 63 present.

The first subject under discussion was the improved robber cloth by Dr. Cheney, of Hoboken. This, besides being ingeniously gotten up, contains valuable features. This was fully described and illustrated, p. 270, April 15. Another device shown by Dr. Cheney was a stand on which to place removed supers, which is so constructed as to make it almost impossible to mash bees on the under side of the super, and, besides, is very simple in construction.

The next was a discussion by W. W. Case, of the tube escape and its uses. So far as can be learned, Mr. Case is the originator of this device; and, while primarily designed for the treatment of foul-broody colonies, it is also ideal for transferring from any sort of hive or box which can be made bee-tight.

This was also fully described and illustrated, page 406 of the June 15th issue.

After lunch, "Short cuts in finding queens" was discussed by I. J. Stringham, of New York; Dr. Cheney, of Hoboken, and Pres. Root, of Red Bank. Mr. Stringham's plan is particularly adapted to finding queens when robbers are bad, and in black or hybrid stock. The operation is as follows:

The hive which is to be manipulated has placed near it a bottom-board; on this a queen-excluder and two empty hive-bodies over it. The hive is gently smoked at the

* The great trouble with many honey exhibits is that the display is too crowded. The open spaces, as in the exhibit above, help to set off the groups of honey.



One of C. H. Root's apiaries showing his winter cases.

entrance, lifted from its bottom, and placed on the two bodies. It is now opened, and two outside frames removed; and after making sure the queen is not on them they are covered from robbers. The remaining frames in the hive are spread and smoked freely. The bees, together with the queen, will cluster under the bottom-bars.

Now raise the hive about an inch, and set it down sharply, thus dislodging the cluster of bees. Replace the combs on their stand, return the two removed combs, and, after smoking the bees from the upper empty body, remove it and place the lower body with the queen-excluder over the brood-nest. Now gently smoke the bees down through the queen-excluder, and the queen will be found trying to pass through the zinc.

Dr. Cheney makes use of a queen-excluder on which is nailed a four-inch board flush with the edge. The hive under manipulation is removed from its bottom-board, and an empty hive-body put in its place. On this is put the queen-excluder with the board attached so it leaves about 3 inches of the lower hive open at the top. The hive of combs is now placed square on the queen-excluder, and the combs removed one by one; and after making sure the queen is not on them they are placed in the lower body through the uncovered space, each one being shoved along to make room for the next.

Pres. Root said all who enjoyed this kind of sport were welcome to it; but this way he considered superior. It is, to keep nothing but quiet gentle Italians; and he never had

any trouble locating the queen by just looking for her.

The last subject to be discussed was the winter case, by Pres. Root. This case is of Mr. Root's devising, and is double-walled with two inches of packing, and telescopes over the regular dovetailed hive-body, the handhole cleats being left off to insure a close fit.

The brood-nest is covered with the thin super cover. In connection with this winter case is used a double-packed bottom-board and packed telescope cover. Mr. Root claims a yearly profit from the use of this case of \$2.00 per colony in saving in winter stores and extra honey gathered early before the cases are removed.

As an indication of the interest in this meeting, one couple started at three o'clock A. M., and rode bicycles 13 miles to catch a train. Several members were enrolled.

NUMBERS AND NAMES OF THOSE IN SUMMER MEETING.

1. G. V. Barnes, Pemberton, N. J.
2. Geo. Grover, Trenton, N. J.
3. B. J. Mayo, Metuchen, N. J.
4. P. G. Snyder, Swarthmore, Pa.
5. C. H. Root, Red Bank, N. J.
6. Mrs. W. F. Dilts, Flemington, N. J.
7. W. W. Case, Frenchtown, N. J.
8. Mrs. E. G. Carr, New Egypt, N. J.
9. Edna Carr, New Egypt, N. J.
10. J. A. Hallinger, Titusville, N. J.
11. C. G. Lippincott, Little Silver, N. J.
12. S. Powers, Wading River, N. J.
13. F. G. Fox, Pipersville, Pa.
14. Henry Bassett, Salem, N. J.
15. Julius Hittel, Plainfield, N. J.
16. R. Grabowski, Trenton, N. J.
17. G. Fransen, Lyons Farms, N. J.
18. Mordecai S. Haines, Mt. Holly, N. J.
19. W. I. Green, Shrewsbury, N. J.
20. Hudson B. Haines, Mt. Holly, N. J.
21. W. B. Bennett, Bloomfield, N. J.



Field meeting of the New Jersey Beekeepers held at Trenton, N. J., last summer.

22. J. L. DuBree, Jenkintown, Pa.
23. Dr. C. D. Cheney, Hoboken, N. J.
24. F. C. Templeton, Plainfield, N. J.
25. Dr. W. J. Wolfert, Red Bank, N. J.
26. Ed Krekl, Northvale, N. J.
27. Jno. D. Antrim, Burlington, N. J.
28. E. J. Dienst, Newark, N. J.
29. Wm. Clayhunce, Titusville, N. J.
30. Henry Mull, Newark, N. J.
31. Richard D. Barclay, Philadelphia, Pa.
32. W. E. Housel, Hampton, N. J.
33. Jos. W. Tonkin, Sicklerville, N. J.
34. Jos. J. Wolcott, Eatontown, N. J.
35. Dr. H. D. Powelson, Bound Brook, N. J.
36. I. J. Stringham, Glen Cove, L. I.
37. Harold Hornor, Mt. Holly, N. J.
38. J. H. Wilson, Ringoes, N. J.
39. C. S. Sharp, Newark, N. J.
40. E. C. Stevenson, Burlington, N. J.
41. W. A. Selsler, Philadelphia, Pa.
42. Jas. J. Keller, Glendale, L. I.
43. Chas. Schilke, Matawan, N. J.
44. Mrs. S. Powers, Wading River, N. J.
45. Mrs. E. C. Stevenson, Burlington, N. J.
46. Mrs. H. D. Powelson, Bound Brook, N. J.
47. Miss Grace O'Connell, New York.
48. Mrs. Julius Hittel, Plainfield, N. J.
49. Mrs. B. J. Mayo, Metuchen, N. J.
50. Mrs. Henry Mull, Newark, N. J.
51. Mrs. E. E. Alexander, Red Bank, N. J.
52. Wm. J. Corlett, Clifton, N. J.
53. Sim Bardsley, Edge Moor, Del.
54. E. G. Carr, New Egypt, N. J.

BEEKEEPING IN THE TROPICS

An Open Letter to F. R. Beuhne

BY CARLOS M. CARMONA

Although I have read *GLEANINGS* for many years I have not cared to enter into discussions about the merits or demerits of plans advocated relating to certain beekeeping questions carried on in its columns, on account of my ignorance of the language, because of my meager knowledge of beekeeping, and also because of so much con-

tradictory advice given by the different contributors. Furthermore, most of the questions discussed refer to questions not affecting tropical beekeeping; and, after all, I have to adapt American conditions and knowledge of beekeeping the best I can to local tropical conditions for want of any source of knowledge of tropical beekeeping to which I may apply.

But lately I have found *GLEANINGS* improving so much, and publishing contributions from different parts of the world touching matters that also affect tropical beekeeping, that I have been much interested, and have been benefited greatly on certain points which I have heretofore been unable to understand or explain. Having a new interest in the matter, therefore, I beg to ask a few questions and report my experiences to confirm certain questions dealt with recently.

To begin with, I beg to confirm every word, p. 537, Aug. 1, as my own experience. beginning, "Years ago it used to be much heavier," to the end of the article, with the exception "I merely abandoned the plan as unreliable," for it is only lately I abandoned it on account of recent contributions in *GLEANINGS*, and presto! the loss of 50 per cent of my queens stopped, to my surprise and delight. Formerly I had noticed that, after a swarm in a normal colony issued, the remaining virgin queen always returned fertilized, and began to lay in due course without any meddling, notwithstanding the colonies were placed quite close together and under a shed, and while the nuclei, placed

as far apart as possible, with the entrances contracted with different contrivances to help the queen find the location, were queenless most of the time. I could not explain the reason, but now I can. The last controversy about the matter enlightened me fully, and the experience confirms it.

The answer to the query on p. 536 is, "*Normal conditions*," as in the case of supersedure.

Mr. Beuhne says, p. 535, "Early in the spring I exchange queens between colonies having a three-year-old queen and nuclei with previous season's queens." Would he or you please explain the *modus operandi*? It may be quite plain to experts, but I should be thankful for details. By the by, this three-year-old-queen business does not confirm last paragraph on page 518.

If "hives are tiered up three and four stories high *without a queen-excluder*," how is the extracting managed? No brood in the top stories? How is one sure where the queen is? How are the supers taken from the hives—by using Porter escapes or brushing the bees from the combs? How about the lower stories having combs full of honey at the sides? Is there any entire absence of drone comb in the upper stories?

Mr. Beuhne says, p. 535, "These are, of course, the best colonies, and the general average for the 100 colonies in this apiary." How is it that out of eight colonies in this apiary not less than five colonies are numbered over the one hundred—viz., 260, 248, 205, 127, and 250?

In the spring Mr. Beuhne expects the queen to lay in at least two stories; therefore, before that, she is confined to one story. As the colonies are tiered later three and four stories high, where and how does he keep so many empty combs? I have noticed the instructions given on pp. 547 and 486. This is a perplexing question with me, and one of long standing. Although I can not practice the freezing part, for obvious reasons, I thought that combs kept from the moths would last indefinitely, being made of wax. Two galvanized tanks of 250 and 150 gallons each were properly packed to the top with the combs, carbon bisulphide applied at intervals, and the tanks properly covered. But the combs crumbled, disintegrated, and turned to earth in the end. Only a heap of dust at the bottom of the tanks and the stacks of wired frames was found. The tanks were in the extracting-room.

Trinidad, B. W. I.

[Mr. Beuhne's reply follows.—ED.]

EXCHANGING QUEENS BETWEEN DIFFERENT COLONIES

BY F. R. BEUHNE

In reply to Mr. Carmona, above, as to the method of exchanging queens as mentioned in my article, Aug. 1, p. 535, there is really very little to explain. A comb of brood with the three-year-old queen on it is taken from the colony and inserted in the vacancy made in the nucleus by the removal of a similar comb with the young laying queen. The latter is then in turn put into the vacant space between the brood-combs of the colony. A small box is used to hold one of the combs and queen while the other one is put into its place. This exchanging of queens would, perhaps, be somewhat risky if the bees in an apiary are demoralized by robbing. I have not, however, had a single failure. Of course, queens can be exchanged by the introducing-cage method; and when the nuclei contain frames of different size from the colonies it is the only possible way. I much prefer the other method, as there is then no need of going back to see whether the queen has been released and to remove the cage.

QUEEN-EXCLUDERS; TIERING UP.

In answer to the question, "If hives are tiered up three and four stories high without a queen-excluder, how is the extracting managed?" I would say that the theory is to let the queen have the free range of the whole hive before the main honey-flow. At the first extracting, the queen and the most suitable brood-comb are put into the bottom body with an excluder between it and the upper stories. An exit is provided for drones to escape from the upper stories to avoid getting the excluder clogged with dead drones. I admit this entails some extra work and attention to details, but it is well paid for by results. Inserting the queen-excluder when extracting for the first time is the best method for "an ordinary honey-flow." If the flow is heavy, such as mentioned on pages 534, 535, Aug. 1, the excluder is not needed at all. The intake of honey is so great that the queen is forced down to the lower combs. No brood in top stories? Yes, of course there is. Brood from top stories is exchanged for combs of honey in the lower chamber. Porter escapes are not used by any one here so far as I know. In two of my apiaries the very small ants would be in before the bees get out of the combs; and why go to a hive twice—once to put the escape in, and then to take the honey away when you can take the honey away at once in very little more time? One frame is taken out and temporarily

placed against the hive; the bees of the succeeding ones and the first as well are shaken *into* the hive (not in front of it). Where are the bees which were shaken off one or two bodies of combs while the latter are being extracted? In my own practice they are already at work on the empty combs, which I left there when removing full ones. If I have no spare empty combs when commencing extracting I replace the first full combs removed with frames of full sheets of wired foundation. The extracted combs as they come from the honey-house are exchanged for full ones, and so on to the end of the day's work, when the remaining bodies of extracted combs are placed on top of the hives to be extracted next day. Thus it will be seen that taking away the honey and returning extracted combs is one operation.

Is there an entire absence of drone comb in the upper stories? No, not entire; but as nearly so as the use of full sheets of foundation in all new frames can make it. To make the best use of a heavy honey-flow, such as we get from some of our eucalypts, one must have plenty of supering. It is all a matter of preparation during the short winter, and the investment of a little extra capital. When the flow is on, the bees will draw out one set of frames of foundation after another with astonishing rapidity.

There are conditions of weather or other circumstances which will sometimes prevent extracting while yet the bees are storing steadily. Well, put on more supers, and you will increase your yield considerably. Bees will not fill up a cell to the rim with thin honey, because it would not evaporate properly; and when the cells of one set of combs are half full, and no other empty ones available, the bees are not doing what they might do.

How is it that, out of eight colonies in an apiary of 100 stocks, some are numbered above one hundred (page 535, Aug. 1)? The answer to this question is: All my colonies are numbered. The number individualizes the colony the same as a name does a horse or a cow, and therefore the number follows that colony wherever it goes. The colonies in the apiary referred to were selected from my home apiary, those in the best condition to stand the transportation being picked out. They retained their original numbers, otherwise I should lose all record of their past performances, pedigree of queens, etc.

In reply to the question as to keeping surplus combs during winter. I can add nothing to what appears on page 547, Aug. 1, and in the A B C and X Y Z book, except

that I have never fumigated combs in any way, and never have any trouble with wax-worms, although they are plentiful enough in this district. I put the combs away in the supers, covered moth tight in a bee and moth proof honey-house; and as the combs of Italian bees are free from moth eggs while on the hive, the important point is not to let the moths get access to them by leaving them unprotected after removal from hive and before putting away moth-tight. It is little use putting combs away secure from moths when the moths are allowed to lay eggs in them first. I am of opinion that the combs in the galvanized-iron tanks were destroyed by the action of carbon bisulphide applied to excess.

Tooborae, Victoria, Australia.

WINTERING BEES ON LOAF SUGAR

BY E. G. CARR

In replying to the question as to when to transfer bees, somebody has said, "Whenever you wish." While this can not be taken literally as meaning at any time of the year, still if one has the material and skill, transferring can be successfully done at seemingly very unfavorable times.

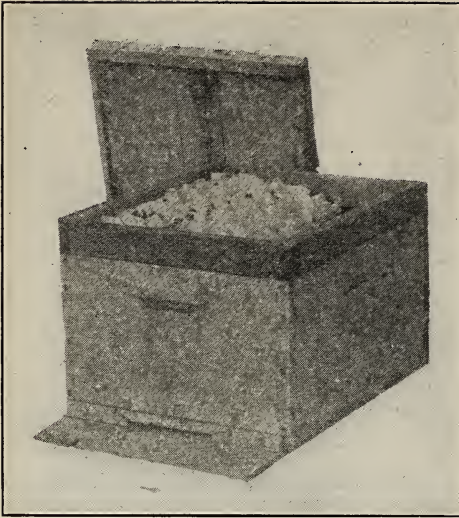
A neighbor wishing to "take up" a box hive asked how best to kill the bees. Wishing to experiment with loaf sugar alone as a substitute for honey for wintering, I offered to take the honey from the box and leave it with him and take the bees.

On Dec. 16, 1912, the weather being fair and the temperature near 50, the old box was turned bottom side up, well smoked, and the side pried off. The combs were removed one by one, the bees brushed into a box, taken home, and dumped into a ten-frame hive containing wet extracting-combs. These combs were extracted late, and contained perhaps a pound of honey in all. A two-inch rim was put on top of the hive. The following day an unsuccessful search was made for the queen.

On Dec. 21 another search was made for the queen; and two patches of brood, each about six inches in diameter, were found. Knowing the queen to be safe, ten pounds of loaf sugar was put on top of the frames, and an ordinary flat cover placed on the hive. No packing whatever was used.

An examination on Feb. 1 showed the cluster of bees partly above the frames and through the loaf sugar, this being also the condition on Feb. 8.

March 20 the sugar was removed, weighed, and found to be 6 lbs., 4 lbs. having been taken down in three months. At this time



Hive fitted with tray for feeding loaf sugar in cold weather.

two frames contained brood, the total being almost equal to 1 1-3 framefuls. There was less than half a pound of stores in the combs, a few cells being sealed. A very nice supply of new pollen had been gathered, the bees working on maples and elms at intervals since Feb. 21.

On March 31 the sugar was again weighed, showing $5\frac{1}{4}$ lbs. still on top of the frames, and not over half a pound of stores in the combs. There was no noticeable gain in brood after March 20, and very few days when bees could do much work, owing to high cool winds and rain.

About the 10th of May one frame of honey was given this colony, although there was a small amount of loaf sugar left. This colony was worked for comb honey, and about 40 sections from clover taken. It was quite a small cluster of bees when originally transferred.

The experiment shows that bees in this climate can be wintered on loaf sugar alone.

It has been suggested that this knowledge can be made of use, not only in supplying a deficiency of winter stores, but also in treating for *European* foul brood after the breeding season when there is not on hand a supply of field combs on which to shake the bees. The idea was to extract the honey from the infected combs, return them to the hive, and place loaf sugar above the frames. The theory is that the bees will thoroughly clean the cells of honey, preferring it to the loaf sugar, and there will be no infected honey left to start the disease when breeding commences.

It is well to bear in mind that this is not given as a tested cure for European foul brood, but only a plausible theory which may or may not be of value.

New Egypt, N. J.

THE 24TH ANNUAL CONVENTION OF THE CALIFORNIA STATE BEEKEEPERS' CONVENTION

BY P. C. CHADWICK

The convention was held at the Y. M. C. A. building in Los Angeles, December 9-11, as per schedule. Nearly the entire time was taken up with business, the usual papers and lectures being dispensed with that all matters of business might have careful attention. Harmony prevailed through the session, though at one time danger ahead was signaled when the failure of our foul-brood law was being discussed. Trouble was averted, however, by a prominent member pointing out that there was to be nothing gained by wrangling over the question.

The meeting was, indeed, a representative assembly of active beekeepers of the State. Familiar faces from the north and the south were to be seen among the workers. There were also beemen present from Idaho, Utah, Nevada, Colorado, and Ohio. Most prominent of these were Mr. G. C. Matthews, of Idaho; Harry Crawford, of Colorado, and A. L. Boyden, of Ohio. Some new members whose faces have not before been seen in the convention were welcomed, for they must in time take the place of the older ones, just as, in the last twenty-four years, new ones have come and old ones have gone, there being always an enthusiastic bunch, nevertheless, to carry on the work. One is reminded more of a fraternal or religious gathering than that of beekeepers. Hope abounded in spite of two seasons of failure, and there were smiles and jolly words for every one. Indeed, the phrase might well be coined, "As hopeful as a beekeeper."

There was no regular session on the 9th, the afternoon being devoted to pre-convention committee work.

At 10:30 A. M. of the 10th, Pres. Farree called the regular session to order. This session was occupied by the reading of the minutes of the previous meeting, the treasurer's report, and the appointment of new committees. The afternoon session was short as a body, nearly the entire time being devoted to committee work, all members willing to work being placed on a committee. The banquet announced for 6:30 P. M. was deferred until noon of the 11th.

On Dec. 11 the convention was called to

order by Pres. Farree. The exhibit committee reported progress, but stated they were in need of funds to carry on the work, and an appeal was made to every beekeeper of the State to aid by sending in immediate donations or give a pledge for a certain amount at a later date.

The corporation committee explained why the Consolidated Honey-producers of California had been incorporated. If I am correct it runs like this: There was a clause in the proposed foul-brood law in which the names of the president and the secretary of the State Association were named as members of the apiarian commission. When the bill reached the legislature it was found that there was no such organization incorporated, and the secretary was so notified. There was a hurry call to organize legally in order that a stumblingblock might be avoided. It was found that it would be impossible to organize under the name of the California State Beekeepers' Association, due to the fact that there was on file in the office of Secretary of State a name very similar, and he would not allow it. It was then decided to adopt the name of Consolidated Honey-producers of California, which was done, the new organization being the legal head of the present association and belonging to it. As nearly as I could glean from the discussion, here was a worse stumblingblock than the one sought to be avoided, for the reason that the new organization was organized, not as a mutual association, but as a profit-sharing company. J. Edgar Ross, of Imperial Co., I think, expressed the situation when he said the appointment of an officer of a business corporation on a commission to regulate its own business could not be sanctioned any more than to appoint an officer of the Southern Pacific R. R. as State Railroad Commissioner. This leaves me with the impression that the governor was justified in vetoing our bill, and that there should be no blame placed on the shoulders of Prof. Cook, as has been done by some. If the new corporation had been organized as a mutual concern instead of a profit-sharing one I believe the bill would have been signed.

The noonday banquet was the most enjoyable time of the session, there being talks on topics of the apiary; toasts, roasts, and jokes, the burden of which fell, as usual, on our good-natured President, Mr. Farree.

At the afternoon session Pres. Farree and Sec. Shaffner were unanimously elected to their respective offices, Messrs. Bixby and Allen taking the places of Emerson and Mendleson on the executive board. A meeting of the Consolidated Honey-producers of California was called to meet the third Tues-

day in January in the Chamber of Commerce to complete arrangements for handling the honey crop and furnishing supplies for the Association.

THE NEW YORK STATE BEEKEEPERS' CONVENTION HELD AT ROCHESTER, DEC. 2, 3

BY E. R. ROOT

As stated in our issue for Dec. 15, 1913, page 873, this was the largest convention of beekeepers we have had the pleasure of attending this winter in the United States. The only larger meeting was in Toronto, Ontario. President Geo. B. Howe makes a good presiding officer. His enthusiasm is such that it will wake up a whole convention. Ordinary discussions, in which possibly but very few would take any interest, he will enliven with his own personality; and before he gets through he will have everybody wanting to talk. He is also a practical honey-producer as well as a queen-breeder.

With the possible exception of the Colorado Honey-producers' Association, the beekeepers of New York are better organized than those of any other State. This is largely due to the efforts of Mr. W. F. Marks, who for years has been president of the organization, and the man who has taken so much interest in fostering the association idea throughout the State.

On account of our space being so limited it will be impossible for us to give any thing more than a brief resumé of what was said at this meeting. Again, there will be some gaps in our report, not because the discussion was not interesting, but because we were interrupted at times in taking notes.

At the time we entered the convention room there was some talk as to whether the proceedings should be taken in shorthand. It was finally voted down on account of the expense. If there were any proceedings which were worth publishing in full they were those that took place at this meeting.

After some preliminary discussion in regard to membership fees in the local societies affiliated with the State organization, the general program was taken up.

The president, in his opening address, spoke of the importance of advertising our product. He called attention to the honey writing-pads that are sent out by members of the association to the consuming public. These pads,* calling attention to honey as a food, will be kept prominently before the consumer because of their utility. He referred to the importance of having crop

* These pads were gotten up by W. F. Marks. As they are very unique we will have an illustration of one of them later.

reports from various sections of the State and country, in order that the honey-producers might know how prices would probably rule. Under present conditions the small producers set the price. Some plan should be formulated by which these men can be brought into line. Again, we must have organization. This should be so thorough that there will be a spirit of co-operation and a general knowledge of conditions of the season. So far the New York State Association has kept aloof from the National; but the time has now possibly come when the State organization should affiliate with it. The old prejudices of the past should be allowed to die out. If mistakes have been made they should be forgotten. He would recommend that measures be taken to get in touch with the National.

During the afternoon the question "What can be done to prevent the variations in the price of honey?" was introduced by Mr. S. D. House, of Camillus, N. Y. Any one who attended any one of the meetings of the beekeepers in New York could not help noting that Mr. House is a live wire. He is another one whose enthusiasm is contagious. Mr. House started a lively discussion. It was not so much what he said as what he drew out of others until everybody wanted to talk. It is not the little beekeeper only, said Mr. House, who is making the trouble with the demoralization of prices. Some of the large producers, who are not in close touch with the organization or with each other, will establish a price of their own that will knock the bottom out of the market. He believes we should have a committee of five to get out crop reports. Later this question was thoroughly thrashed out, in which it was shown that some members were selling too low. It was decided that prices could not be fixed at that time, but that some scheme should be adopted to insure a uniform scale of prices. This subject was thrashed over until it seemed there would be no solution when Mr. Marks moved that the whole matter be referred to the committee on resolutions. This was agreed to.

This was followed by an address by Mr. H. L. Case, of Canandaigua, N. Y., entitled, "Is the capping-melter a necessity? If so, what style is best?" Mr. Case somewhat startled his hearers by saying, "I never saw a capping-melter in my life. I am a producer of comb honey, and therefore have no use for such a contrivance." Then he paid his respects to the secretary for assigning to him a subject that he knew nothing about; but now that he was on the program he was going to say a few things relative to what he had found useful. One of them was a

little tin pocket that he attaches to the side of the hive to hold the hive-record. These records are made of pieces of common section boxes. The pocket is so constructed that it sheds water and protects the record from the weather. He had also a scheme for wiring frames that would do away with drone comb.

At the close of his brief address he was followed by Mr. Baldrich, who went on to describe that the capping-melter that he uses is not a device for taking care of the cappings as fast as they fall from the knife, but to melt them after they are drained. The device consists of a double water-jacketed boiler that may be used on a common stove. Mr. Irving Kenyon, secretary, uses something similar to this, and he has found it a great convenience. Mr. House described a machine he had seen at the A. I. Root Co.'s place, that melts the cappings as fast as they fall from the knife.

We next listened to an address from a government man, Mr. Geo. S. Demuth, of the Bureau of Entomology, Washington, D. C., on the subject entitled "Some Critical Periods in the Season's Management." There are several things that might happen to a colony of bees, and some of these are under the control of the beekeeper. The source of nectar and weather conditions, of course, are entirely beyond the control of the bee-man; but there are other conditions which the beekeeper may modify; and one of these is the condition of the colony. Sometimes we have all the conditions favorable, and then we can secure a good crop. Then come times when bees need to be fed. Scarcity of stores may mean a loss of brood, of bees, and the honey crop. Then there is the problem of keeping the forces together instead of having them dissipated by unnecessary swarming. This is more difficult to accomplish in the production of comb honey than extracted. The question of when to put on another super, and whether to place the same under or above the one already on the hive, is important. He believed that a great many beekeepers do not give room fast enough. Some err in giving it too fast. He would impress the very great importance of contentment in the family.

At the close of this address Mr. S. D. House spoke of this idea of "contentment," saying that, in order to get the maximum work out of a colony, there must be contentment and not uneasiness—a condition where all hands seem to be busy with the single object in view of gathering nectar from the fields, and making a place to store it. He also indorsed what Mr. Demuth said on the subject of tiering up—that some do not give room fast enough. The discussion naturally

turned to the conditions that bring about swarming, and how to prevent or forestall the same. Mr. Demuth in the discussion that followed stated that contentment can be brought about sometimes by giving more ventilation, sometimes more room, or both. The Aspinwall hive, for example, provides both of these conditions. Mr. House said he believed that the Aspinwall hive would effectually stop swarming, but he thought it too expensive, and that a sectional hive, on account of its easy manipulation, was cheaper, and better for the purpose. Dr. Dines agreed. In the course of the discussion that followed, some thought that an overplus of drones tends to induce swarming. Mr. Charles Stewart held that it was not an overplus of drones but too many nurse bees. To this Mr. House and Mr. Demuth agreed. Speaking of the Aspinwall hive, Mr. Irving Kenyon reported that he had tried it out very thoroughly and had found it a success, both in the matter of preventing swarms and in the production of comb honey, but considered it too expensive for the average beekeeper to adopt.

IS IT DESIRABLE TO KEEP BEES IN THE SHADE?

This was discussed by W. D. Wright, of Altamont, N. Y., who is not only an extensive beekeeper but also one of the State foul-brood inspectors. This question, he said, may be answered by yes or no. The apiarist needs shade as a matter of comfort to himself; and incidentally it may be useful to the bees. He had long advocated and practiced using an orchard with medium-sized trees as a desirable place to have an apiary. It is not always possible to have such an orchard, but he was sure that too much shade is too much of a good thing, and for that reason he did not advocate large trees. Shade-boards may be satisfactory, but he considered them objectionable on account of their inconvenience in handling, and because they detract from the appearance of the hive. Years ago he tried out shade-boards, but discarded them. In conclusion: 1. He would keep all hives painted white; 2. Provide a good circulation of air around the hive; 3. Give large entrances; 4. Give all strong colonies plenty of room.

Mr. H. L. Case said he had used shade-boards both for shade and at other times of the year, when the bees do not need them. At such times he puts them in front of the hives to kill the grass.

Mr. Chas. Stewart had a part of his hives in the shade and a part out in the open. He could see no difference in honey production. He has observed that when the hives are not shaded the bees go out earlier in the morning, while those in shaded hives would work better during the heat of the day. President

Howe said that black bees and Caucasians need more shade. Mr. W. F. Marks arose to ask "Who has black bees? Does not Mr. Howe mean brown bees?" This brought out not a little discussion showing that there were two strains of black bees; viz., the little black bees and the larger brown bees.

Mr. C. B. Howard next discussed the question of whether we should retail extracted honey in liquid or granulated form. He had been selling granulated honey like lard and butter. Such a plan eliminates the cost of handling, and at the same time educates the trade to honey in that form. The discussion naturally drifted toward selling liquid honey in various forms. Irving Kenyon sells his in pails; Louis Wahl in milk-bottles, and he showed some very pretty honey of his production. He allows three cents for each pint bottle, and five cents for a quart bottle when returned.

At the evening session there was a lively discussion of the question-box—breeding queen-bees and breeding bees in general; best sections for the production of honey; best Italians to resist bee disease, and the color of Italians.

President Howe gave it as his opinion that the imported Italian bee may show only two yellow bands. He had been informed that there are very dark Italians in Italy—some of them even black.

On the question of whether comb and extracted honey could be produced profitably in the same hive, there was quite a difference of opinion. Some of the largest producers seemed to feel that it was not practicable, although it might be done.

Wednesday morning Mr. Greiner, who, up to this time, had taken no part in discussion, was asked to give his opinion on the proper location for an apiary. First, he said he would have a good honey location; second, good roads; third, a shady place in which to work. He could not always use an orchard, although he preferred it. Some locations out in the open, he said, have more swarming. One yard he had in dense shade gave him some of his biggest yields. Mr. Coggsall, one of the most extensive beekeepers in New York, said, "Locate anywhere, just so you do not crowd on other people." He found that clay land gives the best clover. The apiary should be well protected by undergrowth for a windbreak. At all his yards he has a building, and one key for the locks of all the buildings.

Mr. Geo. S. Demuth, of the Bureau of Entomology, next delivered an address that ought to be printed in full. We have quite a complete digest of it; and every beekeeper, especially if he intends to keep "more bees," should read it over carefully.

PROFITABLE AND UNPROFITABLE EXPENDITURE OF LABOR IN HONEY PRODUCTION.

One of the remarkable things one notices, he said, when visiting beekeepers is the vast difference in the amount of time and labor expended by different individuals in accomplishing similar results. It is not always the professional beekeeper who produces his crop with the minimum expenditure of time and labor, nor is it always the amateur who produces his crop with the maximum expenditure of time and labor.

There are men here who are operating a series of apiaries with probably a less expense than others are expending on a single apiary. A peculiar thing about this feature of beekeeping is the fact that it is not a phase of the business that can readily be taught at conventions nor through the journals, nor even by visiting the more efficient beekeeper. It seems rather to come from experience — not experience measured in years of routine work in the apiary, but the experience of the manager, the experience of the man who is not so covered up with the details of his business that he is unable to see their interrelation and relative importance.

To make the problem more difficult, the beekeeper is at once both manager and routine laborer; and one tendency is to become so engrossed with the routine work that ability as a business manager may be developed slowly. Fortunately, however, beekeeping calls forth such a **variety of activities** that it stimulates development in various directions. Beekeeping is a business of details; and while one may be overwhelmed with the multitude of details, another with double the number of colonies, and perhaps other business interests, somehow gets through the busy season and lives to tell about it.

The paradox that the one who has the most to do has the most time for extra work, holds in beekeeping as well as elsewhere. The usual trouble with the man who is overworked is that he hasn't enough to do to compel him to systematize his work. It may, therefore, sometimes be a kindness to overworked individuals to impose extra burdens upon them.

The greatest efficiency in beekeeping is not developed by operating a single apiary of one or two hundred colonies with no other business carried on in connection. He had in mind a beekeeper who was forced into greater efficiency by a series of promotions in other business. He has gradually increased the number of colonies operated; and during the same time has been compelled to decrease the amount of time spent in the apiaries. Years ago, with a single api-

ary and but little other work, he was a very much overworked individual; but now he is operating three apiaries of 60 to 100 colonies each, for comb honey, is otherwise employed, and several hundred miles away from the bees during 10½ to 11 months of the year.

Compared with some of you, this particular beekeeper is but half grown; but it required considerable external pressure to compel him to become more efficient as a beekeeper.

The beekeeper who uses his energies and ability at "half capacity" in order to be able to label himself a specialist is paying a high price for a fancy label.

The beekeeper with 100 or 200 colonies, who hesitates about keeping more bees, should by all means take up some other work in connection with beekeeping.

The motto, "Keep more bees," should stand as a monument to the memory of the remarkable man who so patiently and persistently taught it; and it would seem like sacrilege, he said, to change it in any way; but could we not put up in big letters, "Keep more bees," then write underneath in small letters, "but if you don't, get another job to be carried on in connection with beekeeping, and work at the other job most of the time"?

The election of officers resulted as follows: President, S. D. House; Vice-president, John T. Green; Secretary, Irving Kenyon.

ODE TO A HONEY-BEE

BY T. F. NORRIS

Dear bee, thou art a rover
When the meadows bloom with clover.
From bloom to bloom thou'rt going
Where the sought-for nectar's growing.
Fearless of the rain and thunder,
Through the distant fields you wander;
Where the winding streamlets flow
Ever onward, still you go.

Onward still, thou blossom-rover,
Till the autumn flowers are over.
With too much courage for a bee,
Or any thing so small and free,
Through noontide's scorching ray,
Ever hastening on thy way,
On thy way on pinions fleet,
Still in search of hidden sweet.

Toil on, thou restless rover;
O'er many blossoms thou dost hover;
Merrily o'er each bloom bounding,
With your merry hum resounding,
Toiling while the day is closing,
Thence homeward to thy home reposing.
Is thy home a hive or tree?
Pray tell me, dear honey-bee.

Vanceburg, Ky., Dec. 17.

Heads of Grain from Different Fields

Moving Bees in Mid-winter

On Feb. 1, 1913, bees had a flight. It turned cold that night, and we had a snowstorm Feb. 11. I moved 40 colonies about 100 yards, and a few days afterward bees could fly again. I asked my man if he noticed any bees go back to the old place. He said, "Yes, they were all down at the old place for a few days, but always went back at night." That going back at night he was just guessing about. From what I have noticed in moving a colony that had been in ten days on account of bad weather, this fall, late, and the going back last winter, I am under the impression that a lot of flying bees are lost by cold-weather moving. I have some to move a short distance, but I am not pleased with this cold-weather moving, as a flying bee has no time to hunt a home when away from the cluster in cold weather. They simply perish. I have a neighbor who was compelled to move 30 colonies from one side of his house to the other a few days ago. I asked him if they went back. He said, "Yes, but they seemed to get back home to their new location again," and added that he could not notice that he lost any.

Galena, Kan., Dec. 8.

J. P. BRUMFIELD.

[Your bees had not been confined long enough to move them only one hundred yards. A far better and safer way is to put them in the cellar and keep them there for two or three months. Then you can move them to another location; but even then some of the bees may be inclined to come back to their old stands. When bees are moved out of the cellar, and put back in the same location, though not on the same stands, they will mix more or less; but this does no harm. In moving bees in midwinter from one side of the house to the other, it is desirable to have the old location changed as much as possible; and the longer the bees can be confined to their hives before they fly again the better. They will go back, providing it does not turn cold toward evening too quickly, chilling them so they can not return if they would. If there is a period of a couple of weeks of bad weather from then on, these chilled bees will never get back; but if the cold spell lasts only two or three days, and then warms up so the bees can fly, these chilled bees, as soon as they warm up, will generally take wing and go home. This is not a crude guess, for we know whereof we speak.—Ed.]

Best Time to Requeen

What is the best time to requeen in central Iowa? How is it best and easiest to find the old queen?

EDWARD WURTZEL.

[The best time to requeen will depend somewhat upon conditions. If there is European foul brood in a locality, and the bees are black, the sooner you do it the better. If you rear your own queens, a good time to requeen is during the swarming season. Cut out swarming-cells from the best colonies; put them into nuclei where they can hatch virgins; then allow them to mate. After they get to laying, kill the poorest of the queens in the full colonies, and put these young queens in their place. If you buy your queens the best time to requeen is after July 1, when prices are at their very lowest. During July and August, queens can usually be bought at quite a reduction in price, providing a quantity is taken.

There is no best and easiest way to find the old queen. In the case of black bees it is sometimes advisable to run all the bees through perforated zinc and catch the queen on the metal after all the bees have gone through; but in the case of ordinary Italian and hybrid bees, or any bees that will be quiet on the combs, the best way is to look over the combs carefully one by one until she is found.—Ed.]

Apiaries—Proximity to Common Highway and Line Fences

Have you any knowledge of cases tried in this State to determine the distance the law requires bees to be set from a public or private highway? The reason I am inquiring is that a party is trying to force a private highway through the edge of my apiary. Should he be successful in securing the road, would I be obliged to move my bees? I have always used this yard for my bees.

Alamo, Mich., Nov. 29.

BERT WILLIAMS.

[We have no knowledge of any cases tried in Michigan to determine the distance that bees may be kept from a common highway. As a matter of precaution, however, we always advise that bees be kept as far away from roadways as possible, and in the same way advise keeping a good distance away from a line fence, especially if there is pasturage on the other side, where horses or cows are allowed to pasture.

We do not know what the law would be in a case such as you describe; but we may say in a general way that you are liable for any damages that may take place. We would advise you to move your bees away from the proximity of the private roadway to be on the safe side—that is, providing you can do it, and we suppose you can. It is very much better in cases like this to avoid trouble in the first place rather than to run the danger of court proceedings.—Ed.]

A Correction

Mr. Root:—I am in receipt of copies of the December 1st issue of GLEANINGS, and I wish to thank you very much for the kind words, also for ushering me to the front cover of your magazine. I wish to mention one error in the write-up. I note it reads that I am a son-in-law of Mr. H. F. Cary, which should be W. W. Cary, Jr. I think the following explanation will make clear how this came about. There was a senior and a junior Wm. Whiting Cary. Senior W. W. Cary was the man who worked with Langstroth and helped care for the first successful importation of Italian bees to Long Island, imported by Parsons. Mr. Parsons gave this Mr. Cary a supply of Italians when he returned home from his season's work in 1860. W. W. Cary, Sr., continued breeding Italian bees from that time on until W. W. Cary, Jr., took the business and added to it the vinegar business, which has developed very rapidly. Mr. H. F. Cary is the son of W. W. Cary, Jr., and he is my brother-in-law. He now devotes his entire time to the vinegar business, and W. W. Cary, Jr., spends his winters in Florida. You will note the bee business has been passed down from W. W. Cary, Sr., to W. W. Cary, Jr., H. F. Cary, and to me.

Lyonsville, Mass., Dec. 15. EARL M. NICHOLS.

Snow Does Little Damage if Entrances Face Direction the Wind is Blowing

During the snowstorm on Nov. 9 and 10, as mentioned p. 836, Dec. 1, some of our colonies were under snow to the depth of about four feet for some time. In mountainous countries, where men and beasts are occasionally caught in snowslides we know snow may be very porous, and air may pass through it quite freely; but we have all seen the result of a sudden change of weather when snow changes from a porous blanket to an air-tight covering—often in as short a time as one hour; and consequently I always look to all colonies facing any direction but east, which have no windbreak on the east. I have never found colonies with east entrances, and with no obstruction or windbreak in front of them, entirely drifted shut. There is always a blow-hole formed by the warm breath of the bees. This blow-hole

usually inclines at an angle of about 45 degrees, leading away from the entrance of the hive, and consequently drifting snow passes over it and does not drift into it or close it. If we have a wind-break in front of the entrance, snow will swirl and drift back, closing it.

Greenwich, Ohio, Dec. 9. R. J. WILLIAMS.

Some Experiences with Queenless Colonies Gathering Pollen; Will Bees Gather Pollen without Queen or Eggs?

About the 10th of April a chicken caught a queen from one of my hives. I saw the chicken catch it, and thought it was then a good time for the bees to work on the pollen. On the 20th, ten days later, I opened the hive. Of course there were no eggs, but a good colony of bees for the time of the year. On the 10th I dequeened two other colonies. They also were examined on the 20th. I found no eggs in either hive, and I had cut out all queen-cells, which, of course, left them in the right condition for a trial on the pollen question. About the 23d the black-oak trees began to bloom, and they furnish more pollen than all other bloom combined in this country. They were in full bloom for over two weeks, and the queenless colonies gathered about the same amount of pollen as the other colonies. They all went at it with a rush, and kept it up during that time; but after that was over, Nos. 1 and 3 began to slack off on the pollen. No. 2, however, brought about as much as the other colonies.

I gave brood to each of the colonies for a month or more. I supplied each with brood of the same strain, and No. 2 did not let up on gathering pollen, but brought in about as much as those colonies with queens.

About six weeks after taking the queens I tried to introduce one to each hive. I failed on 1 and 2. I tried again and failed again. I then put a queen between the tops of the frames, and they were both accepted and are strong colonies now with hives full of honey and pollen.

There is a great difference in the strain of bees in gathering pollen. No. 2 had the most solid frames of pollen I ever saw. I swapped pollen for honey with other hives so as to equalize. These bees are hybrids, five or more times crossed up with Italian and brown German. They are just bees—that's all.

BROWN LEGHORNS STUNG.

I have White and Brown Leghorn chickens running in my bee-yard, and the bees will sting the White Leghorns, but they will not sting the white chickens at all.

Central City, Ky.

E. C. FRAZIER.

More About that Peculiar Disease

You invite information, pp. 547, 548, Aug. 1, regarding a peculiar disease appearing in Colorado and California. I have noticed this trouble in this vicinity for the last two years, but have not thought much about it until this year, when it appeared in two out of five hives which I keep in the back yard. The young bees hatch all right, but crawl around for a while and finally get out in front, never to return. Also the old bees bite the cappings and carry out bees all the way from one with just a little color in his head to bees that are ready to hatch.

I examined some of the bees that were carried out, and caught some as they left the cells, and found that some hatched without wings. Others had a part of the cocoon so tightly stuck to them that it was impossible to remove it without killing the bee, and some seemed normal. All bees that were old enough were left alive and kicking outside.

Now, I don't think this is chilling, poisoning, or paralysis, as it doesn't correspond to the symptoms of these. I fed my bees for six weeks on the best of sugar syrup without the least change, and there was

no honey in the hive and none outside to gather, so it couldn't be poisoning. There is no spraying of fruit-trees here either. The trouble commenced in May, and lasted three months, stopping suddenly. It weakened two colonies until I had to unite them, and exterminated another. It doesn't appear to be contagious, as no other colonies caught it. I hope to see more about it.

Corona, Cal., Nov. 12.

DALE RYCRAFT.

Alfalfa Honey Varies According to Locality

Mr. Chadwick seems to think that honey-plants furnish the same grade of honey in all localities. My experience with sage and alfalfa is that they do not. When keeping bees near Bakersfield, Cal., a few years ago I had two apiaries just four miles apart. One was in the district known as the "Weed Patch," where the soil was very sandy and the water was from twelve to eighteen feet from the surface. The other was on the Bloomfield ranch, where water was close to the surface, soil heavy, and with much alkali. Ninety per cent of all the honey gathered in either district was alfalfa. The honey gathered in the Weed Patch, to quote an enthusiastic friend, was "White as milk, and sweet as a sweetheart's kisses." The honey gathered in the lowlands was amber. The taste of the two honeys was different, and the dark honey probably had a higher percentage of water, as it was much easier to throw it from the combs with the extractor. Inyo Co., Cal., on the east side of the Sierra Nevada, furnishes a water-white alfalfa honey, as does the country about Reno, Nev. In Imperial Co., Cal., and Yuma Co., Arizona, alfalfa honey is dark. It is no use saying that the dark honey has been mixed with honey from weeds, etc., gathered at the same time. Bees do not put different grades of honey in the same cell, and at my Bloomfield apiary I never saw as much as one cell of white honey; yet the bees got alfalfa honey, as thousands of them could be seen working on the blossoms of the great fields of that plant about them.

Yuma, Ariz.

W. G. HEWES.

Honey a Cure for Erysipelas

I am going to tell of an incident that happened in our family last spring. My husband's uncle, who makes his home with us, was afflicted with erysipelas in his face so that it was swollen very much. Our physician advised us to get strained honey and apply by spreading on a soft cloth and covering the parts, removing every two or three hours, bathing the parts in warm water, and applying a fresh cloth prepared as before. This we did, and in a short time the erysipelas disappeared, and there has been no more trouble with it.

Our physician, in talking about it said, "I was called to attend a young lady having a bad case of erysipelas, and did every thing I could to relieve her, but with no success until I thought of strained honey. I spread some on a cloth and applied it to her face, which was so badly swollen that all the features were obliterated. On leaving I told them to keep the application on; and next morning, when I called, her eyes were partly open. We continued the honey until we had a complete cure.

"Some time after, I was called to Cleveland to attend a man who had been under another doctor's care. He had a trained nurse who thought that I was a cross-roads doctor who did not know much; and when I told her to put on the honey she openly smiled. But I told her to do what I said, as the man was in such a bad state that I was afraid I could not save him. However, after three days he was so much better that I left for home, telling them to keep me advised as to his condition. He was cured, so I feel that honey is a sure remedy for erysipelas."

Warren, Ohio.

MRS. W. T. DARBY.

Our Homes

A. I. Root

Suffer little children, and forbid them not to come unto me, for of such is the kingdom of heaven.—**MATT. 19:14.**

Take heed that ye despise not one of these little ones; for I say unto you, that in heaven their angels do always behold the face of my Father which is in heaven.—**MATT. 18:10.**

By the way in which I have frequently spoken of Mrs. Root, in these Home papers, some of you might imagine she was without weaknesses like the rest of humanity; and if she imagined I was going to bring out some of her weaknesses right here in these Home papers before all the world I suspect she would "go for" me with a stool or chair or whatever else might come handy. But I am going to risk it at all events; and I am going to speak of two special weaknesses. First, she will not put up with being deprived of God's fresh air. If you shut her up in a close room with the windows fastened down, and tell her she has got to sleep there she will get "fighting mad." Perhaps that is a little exaggeration after all; but still I think it is not very far out of the way. If you ask her to go to prayer-meeting, and there are more than a hundred in one little room, with the doors and windows all shut, I am afraid she loses her religion in her indignation; and I must own up that I do not know but I stand pretty near her in that respect. But perhaps I have learned to put up with bad air a little more patiently than she does, and some of her children are just like her. They say they will not go, unless they can have good air to breathe. I hope that some of the good people who complain, if a window is opened just a little, near them, will read this and think about it. (If they would pray about it too I think they would do better yet.) Many a time have I been enjoying a good sermon and feeling the spiritual uplift because some nice fresh air was coming in from the window near by, when some old person would get up and shut the window clear down, when he could have taken a seat away from the draft, with even less trouble.

Another one of Mrs. Root's weaknesses that I am going to speak of just now is that she can not keep still when she hears a baby cry; and I do believe she has more sense and wisdom in knowing how to do the right thing to make a baby happy than anybody else in the world. Now, that is a pretty big claim, is it not? I do not know all the good women in the world, and so you will have to make allowance for my narrow vision in regard to motherly women who love babies.

I told you some time ago of how a baby's plaintive cry roused Mrs. Root's motherly instincts; but for fear you did not all see it I will briefly go over it again. By some blunder Mrs. Root and I had no place to sleep except in an upper berth when coming home from Florida. I think she was a little car-sick, and feeling badly; and when told she would have to climb up into the "loft," through no fault of our own, she became a little contrary and said she would rather sit up all night. But she could *not* sit up all night, because there was no place to sit. At this juncture a good woman (thank God for good women, "the salt of the earth") suggested that her two children would gladly exchange their lower berth for the upper one; and, sure enough, it was just fun for them to climb up. By the time we began to feel happy, and were getting into our lower berth, somebody insisted on having the heat on in the steam-pipes; but the porter said we could not have a lower window open, for it was against the rules. Then Mrs. Root became cross again. She said she would not sleep in that hot place, without a breath of air, for all the money in the world. Come to think of it, however, I do not think she said that in just so many words. She said it only by action. About this time I began to be so worried and troubled that that little prayer of mine started up of itself—"Lord, help;" and right away after, Mrs. Root was startled by the plaintive cry of a baby. She asked our next neighbor about it, and was told that the young mother was so badly car-sick that she was vomiting, and a lot of women were trying to pacify the baby. They added that the sick mother had only an upper berth, and she was so sick she felt as if she could not climb up into it. Can you guess what Mrs. Root did? She fairly insisted that the poor mother with her baby should have our lower berth and we would climb "upstairs." But the mother protested against having old people like ourselves get away up there. But Mrs. Root vehemently declared she would much rather have an upper berth, and did not mind climbing up at all. There, now I have put my foot in it. Don't you see I started out to say that Mrs. Root had only *two* weaknesses—first, she always grumbled when she could not have plenty of fresh air; second, she would never lie down and go to sleep and get the rest needed when she heard a baby cry (and I honestly believe it does not make much difference whether the baby is any relation to her or not). And now I have

blundered into a third weakness. She sometimes "tell fibs" when she is in a tight place. She actually told that young mother she much *preferred* an upper berth, when she had told the porter an hour before that she would rather sit up all night than to climb up there.

The above reminds me that one of our grandchildren—I guess it was a little girl—after her mother had given her a spanking, after she got through crying she said to her mother, "I lofs you still." Well, like the spanked little girl, I want to say of Mrs. Root that, even if she does get cross when she does not have good air, and bounces out of bed when she hears a baby cry, and even tells fibs (the kind of fibs I have described) to help a sick mother, like the little girl. "I lofs you still."*

Dear friends, the above is a rather long introduction; but it paves the way to the following, which I clip from the Youngstown *Telegram*. Just a minute right here. Do you know there are quite a few dailies that exchange with GLEANINGS? Yes, they are actually sending a paper every day for a whole year, and all they get in return is GLEANINGS twice a month. Is not this a clever world to live in? Well, below is what I read in the *Telegram*:

WELSHES AT FIRST THOUGHT BABY'S CRIES WERE
THOSE OF A CAT.

The lusty cries of an eight-months-old baby probably saved its life early Sunday morning when it was found, muddy and bedraggled, in the front yard of 630 Hayman Street by Harvey H. Welsh, 709 Hayman Street. The police, after working an entire day to discover the parents or guardian of the child, are without a clue as to whom it might belong.

The infant was nearly dead from exposure when found. Had it ceased its cries it is likely that it would have lain in the yard until daybreak, and it is doubtful if it could have stood the ordeal.

According to the police the cries of the child were first heard about 3 A. M. by a sister of Mrs. Welsh. She awakened Mrs. Welsh and her husband, and the latter dressed to go out to make a search. But thinking the cries were those of a cat, Welsh took off his clothes and returned to bed.

The wails continued, and Mr. and Mrs. Welsh were again awakened by the sister who insisted that they make a thorough search. Welsh dressed himself a second time and went out. He found the infant not far away, about three feet from the sidewalk. It wore several dresses, which were water-soaked and covered with mud.

Welsh gathered the infant in his arms and took it home, and the two women set about to prepare food.

* Of course, the above about telling fibs is a pleasantry. Mrs. Root never tells fibs, and will not tell even little ones. She simply changed her mind when she heard that baby cry; and even if she did change her mind rather suddenly, and was rather vehement, I hope other women, especially every mother who reads this, will be ready to change their mind very quickly under like circumstances.

I forgot to add in the proper place that, when we got up in the loft, I pulled the ventilators wide open, and Mrs. Root slept nicely, even if she did spend quite a little time helping to care for the baby and its mother. My little prayer was once more answered.



—Courtesy Youngstown Telegram.

They removed the wet clothing and bathed the child in warm water. The baby, which was a girl, drank the milk given her as though she were nearly starved. Her little body being warmed she fell asleep.

The police were at once notified, and took the baby to the City Hospital. Detective Moyer was detailed on the case Sunday morning, and worked the entire day without results. The child does not belong to the neighborhood in which it was found, and no one has reported to the police that a baby was missing.

The child was left purposely in the yard to be found, or to die from exposure, or may have been placed there by a drunken mother returning home from a night's revel, the police believe.

Along with the above account came the picture of that forsaken baby. Just think of it, will you? Some woman, some mother, left her own baby in a place like that; and when the police made every effort to find that mother they could get no trace of her. Of course, not all women are like Mrs. Root; but I think the greater part of them would have been called irresistibly by the cries of that poor little deserted waif. Imagine a mother, if you can, who would go away under the circumstances and leave her baby out in the cold and wet. She did not even take the pains to place it on a porch or under shelter. She probably knew it might rain, and so how could she perform an act like that? And after she went away did not her conscience trouble her? How could she sleep? how could she rest at all with that terrible burden resting on her soul, that she had thus in such a cowardly way deliberately left her own child?

In these latter days, not only are women taking up men's work, but they seem to be taking on men's vices. One of these dailies

I have mentioned has been telling about a woman pickpocket. We can imagine a man so lost to all sense of fairness and honesty as to be willing to appropriate the hard earnings of another man by picking his pocket; but is it possible that there are women also who are so lost to all sense of honor and justice? Let us now get back to that baby. We are compelled to admit that there are fathers—yes, a lot of them—who run away and leave their children. They generally leave them to burden and drag down the poor patient hard-working mother; but is it indeed true that there are women—mothers fashioned by God's hand—so lost and depraved that they would abandon their own children, and an eight-months-old babe at that?

Before we close I want you to turn over again and take a look at that baby. I have looked at it again and again, and that little puckered-up mouth, so plaintive in its distress, almost moves me to tears whenever I catch sight of the picture. As the little one lay there suffering with the cold and rain, in its baby mind it was wondering where the mother was; and it was wondering, too, where all the good people who had loved it and kissed it in time past had gone. It cried again and again for help.

We all know that babies must be kept warm. Whatever you do, do not let the little ones get chilled. Give the baby plenty to eat; and if out in the open air, protect it with the best, softest, and warmest clothing the world can afford. Jesus said, "The foxes have holes, and the birds of the air have nests; but the Son of man hath not where to lay his head." God has made ample provision for the birds and the beasts; but humanity has to be cared for—especially the first stages of humanity here in this world of ours. These same daily papers have been telling us of the appalling number of deaths of babies—little babies—and the whole world is up in arms to protect these little innocents. Not only are they to have better milk, but kind and wise nurses are sent out to instruct the mothers. God bless the nurses; and may he bless the Christian nation that is taking this matter in hand. Grown-up people are more or less to blame for their misfortunes and troubles; but babies are in no way responsible. The responsibility rests on the shoulders of the fathers and mothers—on your shoulders and mine. It rejoices my heart to think that my life-long companion accepts this responsibility. She very often becomes very tired, I know; but a baby's cry is a stronger appeal to her motherly heart than almost any thing else on earth. Let us as a people not only look out for better environment

for the babies in the way of health, but let us think of their spiritual nature. The world is just now discussing how much environment has to do with helping the babies to become God-fearing, law-abiding people instead of criminals.

The police and everybody else were asking what could have possessed a mother to forget her motherly instincts so far as to go away and leave that pitiful baby there in the wet grass and weeds to die from exposure, for no one heard its plaintive cries. The police, after long experience, suggested an explanation, and the only possible explanation for such a state of affairs. It was the old, old story of strong drink; and I suppose we shall have to admit it is true that in these latter days women are getting to be slaves to strong drink as well as the men. We have had pitiful tales of men—or they were once men—who took the shoes from their poor babies' feet and pawned them to get drink. This woman sacrificed the baby entirely, and went away and left it because she loved drink more than she did her babe.

Let us now once more take a look at that plaintive picture and then repeat the words of our text: "Suffer little children, and forbid them not to come unto me, for of such is the kingdom of heaven."

LIFE OR DEATH—WHICH WILL YOU CHOOSE?

We are told the following was clipped from the *Youth's Companion*:

THE BOY AND HIS FATHER.

"And the father laid a kindly hand on the boy's shoulder, and said: 'Come with me, son. I want to show you something.' He led the way to his work-room in the attic. There were his carpenter-bench and his tools and his lathe; and in the corner was the dynamo that worked them all. The boy had seen them all many times.

" 'What is it, father?' he asked.

"The father laid his hand upon the dynamo. 'Boy, by means of this a mysterious power becomes mine. We call it electricity, but no one knows what it is. We only know that, if we treat it in the right way, it will enable us to do wonderful things. It will work our mills and light our houses and our streets and run our cars. It will enable man to do more than any other power that has been discovered. But at the same time, if you treat it the wrong way, it will strike you dead.'

" 'Yes, father, I know that,' said the boy.

"His father turned toward him with an earnestness the boy had never before seen in his face. 'There is another power, my boy, much like that in its results. There is the mysterious feeling that men have for women, and women have for men. Treat that right, and it will bless your life, and ennoble it. And make you ten times—yes, a hundred times—the man you ever could be without it. Nothing else on earth will do so much for you if you treat it right. But treat that feeling wrong, and it will curse you and blast your life and kill your soul!'

"For one moment father and son looked at each other square in the eye; then together they went downstairs in silence. In the hall below the boy put

his hand on his father's arm and whispered: 'I know what you mean, father, and I know it's true.'"

I can say with that boy, "I know it is true." The boy spoke from a limited experience, prompted by the voice or conscience, while I speak from the standpoint of a man over 70. It is true in youth, it is true in middle age, and it is most *emphatically* true when a man gets to be threescore and ten.

Ye are of more value than many sparrows.—MATT. 10:31.

We clip the following from the *Press Bulletin* of the American Medical Association for October 25:

THE ANIMAL VERSUS THE HUMAN BEING.

Inquiry was recently made of the Minnesota State Board of Health as to a certain family affected with tuberculosis. The family was large and the house small, so that such care could not be given to the afflicted as to prevent the infection of others. The father had means and could afford to care properly for those diseased, if compelled to do so. A State inspector was sent to investigate, and this is what he found. A well-to-do farmer, with a farm of 320 acres, worth \$100 an acre or more; a breeder of horses, having at the time of inspection seven imported Percheron horses and a herd of about twenty-five horses in all; a breeder of registered hogs, his hogs being among the first in the State to be given the serum protective against hog cholera. This farmer has lived in _____ County for about thirty years. Sixteen years ago his first wife died of tuberculosis, leaving three children. He married again. His second wife had thirteen children. The family now consists of father, mother, and fourteen children. A daughter of the second wife, aged 15, died last August of tuberculosis. A son of the first wife, aged 19, has been ill with tuberculosis for at least two years. No precautions have been taken to prevent his infecting others. The mother, with one newly born child and another too young to walk, is responsible for the care of this family of fourteen living children. There is no medical care being given the son afflicted with tuberculosis. Apparently this farmer can appreciate the breeding of horses and the protection of hogs from hog cholera; but he can not appreciate the danger of tuberculosis or the need of protecting not only the members of his own family, but others also, from this disease. The annual loss, in Minnesota, caused by the death of wage-earners from tuberculosis, is about \$12,000,000. The number of deaths annually from tuberculosis in Minnesota is about 2250. The estimated number of cases of tuberculosis in Minnesota at the present time is 10,000 or more. Is this human disease worthy of the same efforts for its extermination as is hog cholera or glanders?

APPLES AND OLIVE OIL.

We clip the following from the *Rural New-Yorker*:

The latest "sure cure" for catarrh is living 90 days on apples and olive oil.

So far as apples are concerned, I am fully in accord. I do not know much about the olive oil, but very likely it might make a "balanced ration" with apples, something like the little bit of cheese that I use with my apple supper. Who will test the above and report?

FLYING-MACHINES UP TO DATE; 900 MILES IN 900 MINUTES.

As GLEANINGS was the first periodical on the face of the earth to give an eye-witness account of the Wright brothers' first flight to make the machine come back to its starting-point, it is no more than proper that GLEANINGS should occasionally notice the progress that is being made in navigating the air. The steps of progress are so rapid now, and as our daily newspapers and magazines are full of it, it would take too much space to give here an account of *all* that is being done. Just now, however, the world is startled by M. Pegoud, who not only "loops the loop," but flies quite a little distance with the machine upside down. Of course he has straps to hold him securely to his seat. At first the world was inclined to say his success was accidental—that he could not do it again; but he has done it again and *again*, and I think he says it is no very difficult trick. The whole thing is described, with some very good illustrations, in the *Independent* for Oct. 23. We give below the closing paragraph of the article:

At the present time the cost of aeroplanes still ranges from \$5000 to \$10,000 per machine, which is too high for the average man; and the sportsman and enthusiast has an extremely safe craft in the water aeroplane—the airboat, which is essentially a boat with wings, and the hydro-aeroplane, which is an aeroplane with floats to enable it to land on water. Water-flying is much more safe than land-flying, because the water always presents a flat surface to start from and land on; and, in case of a spill, the aviator, who is dressed in a floating coat, just gets a drenching. A score of American sportsmen acquired airboats in the past summer and flew them continually, and made from 60 to 80 miles an hour while they flew them; and two of them actually flew from Chicago to Detroit, 900 miles, which they covered in 900 minutes, going through a succession of storms which no boat could have weathered; but there were no accidents, not even a drenching. The demonstration of the safety of water-flying was so conclusive that scores of other sportsmen were converted, and the four principal aeroplane constructors—the Wrights, of Dayton, Ohio; Curtiss, of Hammondsport, New York; Burgess, of Marblehead, Massachusetts, and Benoist, of St. Louis, Missouri, are working overtime turning out this sort of machine.

New York City.

I am not prepared to say exactly who should have the credit for the water aeroplane, as it is called above; but I do know that the Wright brothers made experiments with a craft to skim over the water of the Miami River, that passes through Dayton, a good many years ago, and before any thing of the kind was mentioned in the papers. This I did not get from the Wright brothers themselves, but from one of their workmen. The Wright brothers certainly have the credit (and I guess it is acknowledged world-wide) of making the first heavier-than-air machine to rise up from the

ground; and I am inclined to think they were the first in the world to experiment with hydro-aeroplanes. Somebody will probably cross the ocean very soon with such a craft. If they can go a mile a minute, and skim along in spite of wind and wave, there will be comparatively little difficulty in making the trip. We clip the following from the *Cleveland Plain Dealer*:

TESTS NEW AIR-CRAFT; ORVILLE WRIGHT SHOWS ONE PROPELLER MODEL AT DAYTON, OHIO.

DAYTON, Ohio, Oct. 6.—Orville Wright, himself

driving to-day, tested out his latest aeroplane model in a series of successful flights.

The new model has but one propeller, which with the motor, seat, and drive, is in one unit in the center section, as compared with the former two-propeller machines, with blades in opposite directions. The new model "E" is made especially for exhibition purposes, and is capable of dismantling in short time.

Much of the machine is built of aluminum. In a test against time a flight was made, and the entire machine dismantled and loaded ready for shipment in twelve minutes. This model has been viewed by representatives of the International Club. Another test will be made Oct. 15.

High-pressure Gardening

THE DASHEEN AND SOMETHING ABOUT IRISH POTATOES, ALSO.

I have spoken several times of the difficulty of getting Irish potatoes suitable for planting here in Florida, say in October and November, and we had the same trouble this year. Of course, there are potatoes on the market, but only those recently harvested, and therefore no sign of a sprout started. Two years ago we tried keeping over the potatoes we grew, and dug in April; but the rats got into our cellar in our absence and ate them all; and this past summer, when we boxed them up secure from the rats, they all rotted. On that Brooksville trip through the "wilderness" in front of a lone dwelling I saw some beautiful sprouted potatoes on the grass in the yard. The owner explained that he kept them through the summer without any trouble by simply spreading them out on the barn floor; and since then I have met several people who kept them in a similar way so as to be all ready for planting when they returned from the North. Neighbor Ault, the man of the tall dasheens, is just now digging beautiful new potatoes, and has sent us a panful to mix with our "creamed" dasheens, and, I may also add, very nice new potatoes are on sale, where I sell my eggs, at 60 cts. a peck. We have been, for a month back, fitting our ground and planting Bliss Triumph potatoes as well as dasheens.

In regard to dasheens, see the following, which I have just clipped from the Jacksonville *Times-Union*:

It will not grow in soil suitable for cotton, but may be grown in soil suitable for potatoes. The importance of the dasheen to the Southerner lies particularly in the fact that it matures in the fall, whereas the main potato crop in the South matures in the spring, and in winter the Southern States have to obtain their potato supply from the North. If dasheens were grown and properly appreciated there would probably be little need for the South ever to buy northern-grown potatoes for food.

DISTRIBUTED FROM BROOKSVILLE.

The department's office of foreign seed and plant introduction, which has been the means of making

the dasheen known in America, has received a number of letters like the following:

"On March 20, 1913, I received from your department some dasheens shipped by the Brooksville, Fla., station. I planted them March 24, on a loamy soil here in Monroe, La., two blocks west of Ouachita River. They soon came up and were large enough to begin eating the greens and stems, which our family soon became very fond of. I grew 40 hills. The plants grew up 5 feet high. Some of the plants made only 5 pounds of dasheens while others made as much as 10 pounds to the hill. I have not dug mine yet. In fact, I can leave them in the ground this winter here, as the ground does not freeze so much here. We have been eating the dasheens for some time, and like them better than Irish potatoes.

"I think you should add another name to them, and call them 'dasheen, or poor man's friend,' since any person with very limited space can plant a few hills in a garden or yard early in spring, and have nice fresh greens from early spring until frost, and then, best of all, come the tubers."

Let me say once more, where in the world can you find another plant (or vegetable) that produces a nourishing and delicious food just as soon as it is above ground, and also where every bit above ground and under the ground is edible at every stage of its growth, and that gives a *yield* like that mentioned in the clipping? At this date, Dec. 20, I have seen no 1914 seed catalogs. I am curious to know how many will have enterprise enough to offer dasheen tubers. They will need but little room in greenhouses, hot-beds, cold-frames, and window-boxes, until the big leaves begin to spread themselves. Our "amadumbes" from South Africa are growing finely, and so far look very much like the dasheen. As the beautiful leaves unfold I am watching them morning, noon, and night.

I find I omitted one important fact in regard to the dasheen at the Government station at Brooksville. While there was a fair yield of tubers on ground without manure or fertilizer, the yield was almost doubled by a generous application on several rows through the middle of the field. The amadumbe I have several times mentioned (from South Africa) is now making a splendid growth. A leaf just unrolling grew 5 inches

(during a warm rain) in 24 hours. So far it looks almost exactly like our Trinidad dasheens. Of course I have not as yet tested them for food.

THE DASHEEN MAY YET SUPPLANT THE POTATO;
NEW VEGETABLE MAY REVOLUTIONIZE OUR BILL
OF FARE IN TIME.

I clip the following from the Jacksonville *Times-Union*:

A recent issue of the New York *Sun* had the following:

From Florida comes the report that the dasheen is finding much favor among the farmers of that State, and that it is becoming popular as table food, thanks to the experiments of the State Agricultural Department and to the government farmers at the Brooksville, Fla., plant-introduction field station and elsewhere.

The government's interest in the cultivation of the dasheen is due to its anxiety over the Irish or white potato, which has developed a tendency to contract various diseases, and which is admittedly becoming more uncertain in quality and quantity as the harvests go on.

In a recent number of the *Fruitman's Guide* a Florida correspondent writes that the successes of the Florida farmer in cultivating dasheen will make the Northern farmers sit up and take notice. He points with pride to the crop of a former Jerseyman named Porteus, who planted five acres to dasheen near Tampa and raised 35,000 pounds, or nearly 700 bushels, of the vegetable to the acre. Purlice, he says, expects to clear the snug sum of \$5000 for his season's work, or a cash return of \$1000 to the acre.

The correspondent admits that the price of dasheen (5 cents per pound) is high; but insists that its general cultivation will reduce prices.

Florida, he says, is particularly adapted to the raising of dasheen, as it will grow in the summer months on land that is not generally used for any other purpose. The land where the ex-Jerseyman's crop was raised was planted to celery on November 1 of last year, and produced \$1400 to the acre; and on February 1 he planted Irish potatoes, realizing \$500 to the acre. On June 1 he put in dasheen, which at \$1000 per acre will give him a grand total of \$2900 per acre for his year's work.

According to Robert A. Young, scientific assistant in Uncle Sam's office of foreign seeds and plants of the Agricultural Department, the dasheen is closely allied to the taros of Hawaii, China, and Polynesia, and is well adapted for culture in most lands of the South.

Each hill of dasheens contains one or two large spherical corms, growing to five pounds in weight, around which are developed numerous tubers. Both corms and tubers are similar to the potato in composition, but contain less water.

One plant will produce from four to ten pounds of tubers in good rich soil. Both corms and tubers have an agreeable nutty flavor and are easily digested.

Government analyses show that dasheen contains 27 2-3 per cent of carbohydrates (starches and sugar), and 3 per cent of protein, as against 18 per cent carbohydrates for the white potato and 2.2 per cent of protein.

The dasheen requires rich sandy soil, very moist, but well drained. It is not injured by an occasional flooding, and the hammock lands of Florida are therefore especially adapted to it.

The corms do not keep as well as the tubers, and it is considered advisable to utilize them first. The first-grade tubers weigh from four to five ounces, and are thought by many to be superior to the Irish potato.

It is believed that the dasheen will be a familiar vegetable in our markets before long.

Temperance

GOD'S KINGDOM COMING.

We clip the following from the *Farmer's Wife*:

SUFFRAGE IN ILLINOIS.

The advocacy that Illinois is going to the bad, and that women vote for politics instead of principle, was smashed to smithereens on November 4, when the women of that State got out and voted four to one in favor of no license in 25 different municipalities. In Jacksonville the total vote showed an excess of women's votes over those cast by men to the number of 39. In many of the towns the vote of women was almost equal to that of men.

Illinois is a crucial field, a field wherein women have not been wholly united in the desire for suffrage, but where it has been granted to them. The results of this election prove that when women have a duty to perform they measure well their moral responsibility, and go out and perform that duty to the best of their ability.

And now read this from the *Wheeling Advance*:

OKLAHOMA CITY, Sept. 25.—Not a newspaper in this State will carry a liquor advertisement in any form—it is the only State in the country with such a reputation.

Can any other State come up to this "high-water mark"?

GOD'S KINGDOM COMING DOWN IN TEXAS.

We clip the following from the *American Advance*. Please notice concluding sentence.

Texas' new anti-liquor shipment law, which has just gone into effect, prohibits the shipment of intoxicating liquors into any dry county, dry town, or even dry precinct, from any State, wet county, or wet precinct; and every man participating in the transportation of liquors, even from a wet portion of a city to a dry section of the same—shipper, carrier, agent, receiver—is made liable to prosecution under a penalty clause providing from one to three years in the penitentiary as a persuader against violation. No firm, corporation, or person is allowed to solicit or accept orders in or from dry territory by letter, circular, or other printed matter.

Now read the following from the *Union Signal*:

The attorney-general's department of Texas is reported to have handed down an opinion that newspapers are prohibited from carrying liquor advertisements in papers circulating in dry territory.

Our big city dailies will begin to think things look serious when told they can't send copies containing liquor advertisements into Texas.



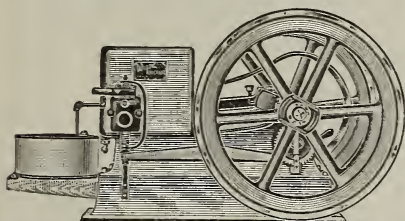
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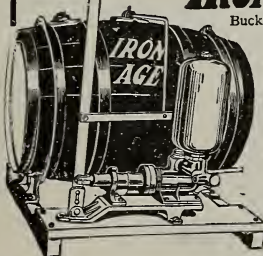
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Bucket, Barrel, Power and Traction Sprayers for orchard and field crops and other uses. Built complete or in units—buy just what you need. Ask your dealer to show them and let Uncle Sam bring you the rest of the story and the spray calendar. Also "Iron Age Farm and Garden News" free.

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The IMPERIAL

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Prices Below All Others

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Over 700 illustrations of vegetables and flowers. Send yours and your neighbors' addresses.

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will sow, cultivate, ridge, furrow, etc., better than you can with old-fashioned tools and ten times quicker. A woman, boy or girl can do it. Can plant closer and work these hand tools while the horses rest. 38 combinations from which to choose at \$2.50 to \$12. One combined tool will do all of the work.

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40 ACRES solid to Superb, Progressive, Americas and other best everbearers. Get acquainted offer for testing. Send us 10c for mailing expense, and we will send you 6 high quality everbearing plants (worth \$1) and guarantee them to fruit all summer and fall, or money refunded. Catalogue with history **FREE** if you write today.

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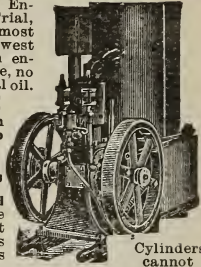
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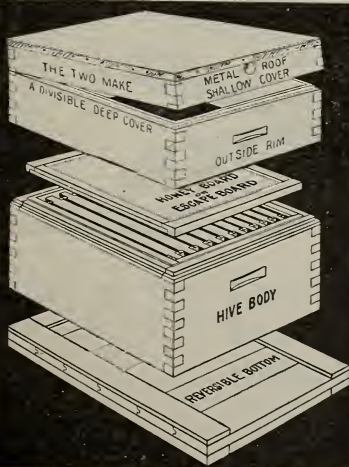
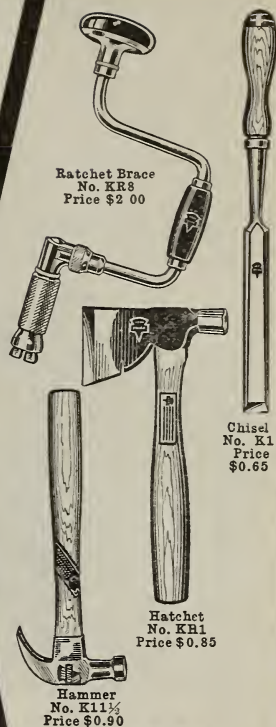
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The Shallow Metal-roof Cover and the outside rim make a divisible deep cover which can be handled together or in part. They eliminate the chaff-tray nuisance and the heavy bungle-some deep cover in manipulation. The rim holds the overhead packing in winter, and acts as a super protector at other times. This combination is the finest in hive construction on the market to-day.

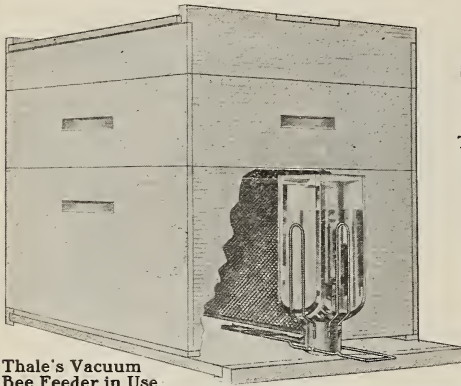
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Thale's Regulative Vacuum Bee Feeder!

MOST perfect stimulative feeder ever constructed. It feeds inside underneath the cluster, and will fit any hive made. To fill feeder, lift off empty bottle and set on full one. It is so regulated by the slide from the outside of the hive to feed any amount that you may want the bees to have in one day. If you set it on one-half pint in one day the bottle of feed will run four days and nights and can be increased or decreased from the outside of the hive without disturbing the bees or moving the feeder. It feeds continuously, thereby imitating a natural honey flow, and will produce more brood with less cost than any other feeder made, and can be filled any time of the day without causing robbing or excitement.

Send for feeder circular and bee-supply catalog. I carry a full line of Lewis Beeware and Dadant's Foundation. One of my Vacuum Bee Feeders complete with two bottles FREE with every ten-dollar order. Send me a list of your wants—it is no trouble to answer letters.



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Thale's Vacuum Bee Feeder in Detail

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Sample Feeder, with 2 bottles complete, mail postpaid, 55c

Ten Feeders, complete with 1 bottle, freight or exp., 35c

All orders over ten feeders only 30c

Extra bottles with cork valve, each 10c

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New Potato Olds' Scotch Rural 350 Bus. Per Acre

A main-crop Rural type potato of new blood. Yields twice as much as Rurals and other standard varieties. Not affected by blight, drouth or bugs.

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5000 bushel crop
1912 Tested and
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Oats, Barley, Grass
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Healthy, northern grown, Strawberry, Raspberry, Blackberry, Currant and Grape plants—all covered by the following liberal guarantee—All plants guaranteed to be first-class and true to name, packed to reach you in good growing condition (by express) and to please you, or your money back. You take no chances. Send for catalog today. O. A. D. Baldwin, R.R. 33, Bridgman, Mich.

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should get the FREE POULTRY BOOK and Catalogue written by ROBERT ESSEX, well known throughout America. After 25 Years With Poultry, it tells How to Make Most From Eggs and Hens for Market or Show, contains Pictures of 30 Poultry Houses; tells cost to build; describes AMERICA'S LARGEST LINE OF INCUBATORS AND BROODERS—\$2.25 to \$48 each. Write today.

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Classified Advertisements

Notices will be inserted in these classified columns at 25 cents per line. Advertisements intended for this department can not be less than two lines, and should not exceed five lines, and you must say you want your advertisement in the Classified Columns or we will not be responsible for errors.

HONEY AND WAX FOR SALE

See our special sale of honey on advertising page 11 of this issue. THE A. I. ROOT CO., Medina, O.

Bronzed honey labels, 1000 for 80 cts.; others, 60 cts. per 1000. PEARL CARD CO., Clintonville, Ct.

FOR SALE.—White-clover honey, thoroughly ripened; A1 quality. E. C. PIKE, St. Charles, Ill.

FOR SALE.—Choice extracted honey in new 60-lb. cans at 9 cts. per lb. J. P. MOORE, Morgan, Ky.

FOR SALE.—Finest quality comb and extracted buckwheat honey. J. M. ELSBREE, Waverly, N. Y.

FOR SALE.—Tupelo honey, barrels and cans. Fine and white. Sample, 10 cts.
I. J. STRINGHAM, 105 Park Place, New York.

FOR SALE.—Finest quality clover and buckwheat honey in 60-lb. cans. C. J. BALDRIDGE,
Homestead Farm, Kendaia, N. Y.

FOR SALE.—White-clover honey in 60-lb. cans. Ripened on the hives. There is nothing finer in every respect. J. F. MOORE, Timin, Ohio.

FOR SALE.—No. 1 white comb, \$3.50 per case; No. 2, \$3.20; 24 lbs. to case.
WILEY A. LATSHAW, Carlisle, Ind.

FOR SALE.—Well-ripened amber extracted honey in 60-lb. cans at 7½ cts. per lb. Sample 5 cts.
H. J. AVERY, Katonah, N. Y.

FOR SALE.—Several tons of raspberry-milkweed honey (mostly milkweed) in new 60-lb. cans (two in case), a very fine honey. Write for price. Small sample free. P. W. SOWINSKI, Bellaire, Mich.

FOR SALE.—White-clover honey, none better. In 10-lb. pails, six in a case, at \$6.50 per case; 5-lb. pails, 12 in a case, at \$7.00 per case; ½-lb. glass jars, 24 in a case, at \$2.80 per case. Sample, 4 cts. Also in 60-lb. cans, very nice amber honey.
HENRY STEWART, Prophetstown, Ill.

Buyers of honey will do well by sending for the January number of *The Beekeepers' Review* containing the name and address of over 100 National members having honey for sale. It is free for the asking. THE BEEKEEPERS' REVIEW, Northstar, Mich.

FOR SALE.—Blended raspberry, buckwheat, and goldenrod honey; has a thick body and a strong and very rich flavor. Put up for sale in new 60-lb. tin cans. Price \$5.00 a can. Sample by mail, 10 cts., which may be obtained on an order for honey.
ELMER HUTCHINSON, Pioneer, Mich.

HONEY AND WAX WANTED

WANTED.—Comb, extracted honey, and beeswax. R. A. BURNETT & Co., 173 So. Water St., Chicago.

WANTED.—Comb honey and beeswax. State what you have and price. J. E. HARRIS, Morristown, Tenn.

WANTED.—Honey, extracted and comb. Will buy or handle on commission. Beeswax—will pay highest price. HILDBRETH & SEGELKEN, New York, N. Y.

FOR SALE

FOR SALE.—A full line of Root's goods at Root's prices. A. L. HEALY, Mayaguez, Porto Rico.

FOR SALE.—Full line of Root's goods at factory prices. E. M. DUNKEL, Osceola Mills, Pa.

FOR SALE.—40 H. P. Westinghouse D. C. dynamo. A bargain. A. T. SENECA, Moline, Ill.

FOR SALE.—A good cabinet-maker's bench; just the thing for the beekeeper.
LEON MORRIS, Elizabethtown, Ind.

Beekeepers, let us send you our catalog of hives, smokers, foundation, veils, etc. They are nice and cheap. WHITE MFG. CO., Greenville, Tex.

New crop of extra-fine quality alfalfa seed, \$7.00 per bushel; sacks, 25 cts. extra; also some sweet-clover seed. R. L. SNODGRASS, Augusta, Kan.

FOR SALE.—Empty second-hand cans, two cans to the case; good as new; 25 cts. per case.
C. H. W. WEBER & Co., Cincinnati, Ohio.

FOR SALE.—Better hive for less money. Beekeepers' supplies and standard-bred Italian bees. Write for catalog. A. E. BURDICK, Sunnyside, Wash.

FOR SALE.—One Vandeyvoort brood and one surplus foundation-mill in fair condition; \$8.00 takes the two. F. W. LESSER, East Syracuse, N. Y.

The best of bee goods for the least money. Send for new catalog. Satisfaction guaranteed or money refunded. H. S. DUBY & SON, St. Anne, Ill.

FOR SALE.—One check-protector, a device for protecting commercial paper. Will be useful in business houses. Will sell at far below cost. Correspondence solicited. MRS. W. Z. HUTCHINSON, Flint, Mich.

FOR SALE.—Root's goods and Dadant's foundation at factory prices. F. O. B. Pacific Coast points in quantity lots. Smaller lots in proportion. Write us, stating your wants.
SPENCER APIARIES CO., Nordhoff, Cal.

FOR SALE.—75 1½-story single-walled 10-frame hives, good condition; complete except sections and foundation, \$1.25 each. One two-frame Root automatic extractor like new, \$10.00. One Doolittle wax-extractor, \$3.00; nine new 60-lb. cans in cases, \$3.00 for the lot. Write for catalog of our new double-walled hive.
L. F. HOWDEN MFG. CO., Fillmore, N. Y.

POULTRY

Rhode Island Reds. Strong baby chicks for sale. Write me. E. O. WALTZ, Medina, Ohio.

LEGHORNS.—Eggs for hatching. S. C. W. Leghorn, \$5.00 per 100; \$1.00 per 15. Send for catalog. WOODWORTH FARM, Wilton, Ct.

Indian Runner breeding-ducks laying now. Utility and exhibition stock (pure white eggs) sent on approval. DERBY TAYLOR, Box G, Lyons, N. Y.

Eggs.—20 for \$1.00; leading varieties prize poultry, pigeons, hares, etc. Booklet free. Large illustrated catalog, 10 cts. F. G. WILE, Telford, Pa.

Rhode Island Reds, Partridge Wyandottes, Mottled Anconas, White Leghorns, White Cornish; Pekin, Rouen, Fawn, and White Indian Runner ducks; also pure white Indian Runners and White Call ducks. Line-bred stock for sale. Eggs to set. Prices reasonable for highclass stock.
L. G. CARY, Trimble, Ohio.

REAL ESTATE

Virginia Orchard Lands, \$15 an acre up. Easy payments. Send names of two friends interested in Virginia, and receive our beautiful magazine one year free. F. H. LABAUME, Agr'l Agt Norfolk & Western Ry., Room 246, N. & W. Bldg., Roanoke, Va.

ALFALFA.—The Royal Legume is increasing \$20 an acre land in the Southeast to \$50 and \$100 values. Four to six tons per acre, selling at \$15 to \$20 a ton, net growers \$50 to \$75 an acre annually. Send for alfalfa booklet and "Southern Field" magazine—all free. M. V. RICHARDS, Land and Ind. Agt. Southern Ry., Room 27, Washington, D. C.

WANTS AND EXCHANGES

I PAY CASH for used beehives. Any quantity. JAMES RENWICK, Leroy, Ind.

WANTED, SOUTHERN QUEENS.—200 for May delivery. F. B. CAVANAGH, Hebron, Ind.

FOR SALE OR TRADE.—"Gleanings in Bee Culture," vols. XLI. to XXXI. C. G. MARSH, Kirkwood, Broome Co., N. Y.

FOR SALE.—Some ditched rich level marsh land; splendid location. Do you know of desirable honey location? If so, kindly write me. D. E. LHOMMEDIEU, Colo, Iowa.

WANTED.—To lease large apiary or work on salary. Have had experience in several States, and can furnish best of references. State salary or terms in first letter. JAS. D. ARVIN, box 237, Millinocket, Me.

WANTED.—100 or more colonies bees in Southern Idaho, from location free from any disease. Please describe fully, with price wanted, and date delivery can be made. Box 18, GLEANINGS, Medina, O.

WANTED.—To correspond with one or two beekeepers in Santa Clara or Sacramento alleys who desire to increase their apiaries this season. Will furnish supplies and take bees in exchange.

JAMES BROWN, care of GLEANINGS, Medina, O.

WANTED.—To furnish every beekeeper within 500 miles of Boise, Idaho, with the best and cheapest bee supplies on the market, *quality considered*. Send me your order or a list of your requirements for 1914. Our catalog and price list will be mailed to you free. Order early and get the discounts.

C. E. SHRIVER, Boise, Idaho.

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FOR SALE.—50 to 200 colonies, eight-frame, first-class. E. F. ATWATER, Meridian, Idaho.

Pure Italian bees or their hybrids, in L. 10 frames, wired, full foundation, 1 or 100. JOS. WALRATH, Antioch, Cal.

FOR SALE OR SHARES.—280 colonies in Mississippi. One of the best honey-producing sections in U. S. Good modern comb outfit. N. F. GUTE, Owosso, Mich.

California Golden queens produce the bright workers, equal to any. Tested, \$1.25 to \$2.50; mated, \$1.75; 12, \$8.00; 50, \$32; 100, \$60. W. A. BARSTOW & Co., San Jose, Cal.

1914 queens. Moore's strain of leather-colored Italians in April at 75 cts. Write us for prices on nuclei. Address

OGDEN BEE AND HONEY CO., Ogden, Utah.

FOR SALE.—Golden Italian queens that produce golden bees; for gentleness and honey-gathering they are equal to any. Every queen guaranteed. Price \$1.00; 6 for \$5.00.

WM. S. BARNETT, Barnett's, Va.

Golden Italian queens that produce golden bees, the brightest kind, gentle, and as good honey-gatherers as can be found. Each: \$1.00; six, \$5.00; tested, \$2.00; breeders, \$5.00 to \$10.00.

J. B. BROCKWELL, Malvern Hill, Va.

Phelps' Golden combine the qualities you want. They are great honey-gatherers, beautiful and gentle. Mated, \$1.00; tested, \$2.00 and \$3.00; breeders, \$5.00 and \$10.00. C. W. PHELPS & SON, 3 Wilcox St., Binghamton, N. Y.

QUEENS.—I am wintering 350 choice tested three-banded Italian queens raised last September. Ready for delivery March 20 to April 10. Price \$1.50 each. Select, \$2.00. Untested, 1 queen, \$1.00; 10 queens, \$7.50. Order early. No poor-looking queens sent out. Send for circular. H. PERKINS, Artesia, Cal.

We requeen our bees every year with best Italian stock to prevent swarming. We offer the one-year-old queens removed from these hives at 50 cts. each. \$5.40 per doz.; \$40 per 100. Delivery guaranteed. Book orders now. Nuclei, any quantity, two frames, \$1.50; 3 frames, \$2.00. Add price of above queens wanted. SPENCER APIARIES Co., Nordhoff, Cal.

GOOD QUEENS.—Good queens are a real necessity in any apiary if best results are to be expected. The old leather-colored three-band Italians have proven themselves to be the best general-purpose bees extant. These I can supply in any quantity you may wish. Untested, \$1.00 each; \$4.25 for six; \$8.00 per dozen. Safe arrival and satisfaction. All orders will have prompt attention.

E. J. ATCHLEY, Bloomington, Cal.

Queens bred from Moore's and Doolittle's best Italian stock; untested, 60 cts. each; \$6.60 per doz.; \$50 per 100. Tested, 90 cts. each; \$10.20 per doz.; \$80.00 per 100. Delivery guaranteed. Book orders now. Nuclei, any quantity, two-frame, \$1.50; three-frame, \$2.00. Add price of above queens wanted. SPENCER APIARIES, Nordhoff, Cal.

FOR SALE.—Italian queens and bees by the pound. Ready for delivery by April 1, 1914. Having over 600 colonies of bees and 500 nuclei from which to draw, we expect to fill all orders very promptly. For a number of years we have been constantly improving our stock with commercial queen-rearing in view. Now we are in a position to guarantee satisfaction to our customers. Give us a trial order. Write for prices, etc. BROWN & BERRY, Hayneville, Ala.

EARLY QUEENS.—Those who desire early queens can be supplied by sending orders to us. Only three-band Italians stand the severe test against diseases, and our bees are clean. Untested queens, \$1.00 each; \$4.25 for six; \$8.00 per dozen. Always safe arrival and satisfaction to everybody. If you desire queens in large lots early, better let us book you as soon as convenient, and money can be sent when queens are wanted. Your check is good, or any way you wish to remit.

THE RIALTO HONEY CO., Box 73, Rialto, Cal.

Many men of many minds; but the minds of practical beekeepers are turned toward the old reliable three-band Italians. We have them in their purity, new blood, new importation. Untested queens from March to June, \$1.00 each; \$4.25 for six, or \$8.00 per dozen, safe arrival and satisfaction to all customers. Write for prices on large quantities. You do not have to return dead queens to us—just state it so on a postal card, and queens dead on arrival will be replaced promptly.

THE GOLDEN RULE BEE CO., Riverside, Cal.

PIGEONS

Pigeons! Pigeons! Thousands, all breeds; lowest prices; satisfied customers everywhere. Start with our \$\$\$-making Jumbo Squab-breeders. Large, free, instructive, illustrated matter.

PROVIDENCE SQUAB CO., Providence, R. I.

HELP WANTED

WANTED.—Help in piaries, 1914. Salary or shares.
F. B. CAVANAGH, Hebron, Ind.

WANTED.—A good queen-breeder; begin March 1 or sooner. Give full particulars in letter of application.
W. D. ACHORD, Fitzpatrick, Ala.

WANTED.—Help in an American apiary. Work the year round, and good wages to the right man. Man and wife preferred. H. H. ARNOLD, Trinidad Honey Co., Trinidad, Cuba.

WANTED.—Young single man, familiar with bee business, to help with supplies, honey, and queen-production. We furnish board and lodging. State wages wanted.
THE PENN CO., Penn, Miss.

WANTED.—Another young man of good habits, who is interested, to work with bees and on farm for coming season. Have nearly 1000 colonies.
N. L. STEVENS, Venice Center, N. Y.

WANTED.—Man (married preferred) experienced in queen-raising; employment by the year on a salary and percentage.
OGDEN BEE AND HONEY CO., Ogden, Utah.

I could take two or three young men of good clean habits to learn beekeeping during the season of 1914; crop last year, 80,000 lbs. Board free, and something more if we both do well.

R. F. HOLTERMANN, Brantford, Ont., Canada.

WANTED.—Three good beemen for season of 1914, for work in Idaho and California. Must be strictly temperate, industrious, and willing to work hard in the busy season. State experience, age, and salary required, in first letter. N. M., care of GLEANINGS, Medina, Ohio.

WANTED.—Young man to work in greenhouses and gardens, and look after small apiary. Must be a quick willing worker who wants permanent position with a chance to learn and work up in the business. Excellent opportunity for poor boy from small town. Must have sufficient experience with bees to make increase and prevent foul brood getting a start.
W. B. DAVIS CO., Aurora, Ill.

SITUATION WANTED

WANTED.—Position with a large honey-producer—extracted preferred. Age 23; weight 160; no bad habits; past two seasons with largest apiarist in Northwest. Reference. Address

FRANK F. STOCKWELL, Box 234, Meridian, Ida.

BEEKEEPERS' DIRECTORY

If you need queens by return mail send to J. W. K. SHAW & Co., Loreauville, Iberia Parish, La.

Nutmeg Italian queens, leather color, after June 1, \$1.00. A. W. YATES, Hartford, Ct.

Well-bred bees and queens. Hives and supplies.
J. H. M. COOK, 70 Cortlandt St., New York.

Quirin's famous improved Italian queens, nuclei, colonies, and bees by the pound, ready in May. Our stock is northern-bred and hardy; five yards wintered on common stands in 1908 and 1909 without a single loss. For prices, send for circular.

QUIRIN-THE-QUEEN-BREEDER, Bellevue, Ohio.

QUEENS.—Improved red-clover Italians, bred for business. June 1 to Nov. 15, untested queens, 75c. each; dozen, \$8.00; select, \$1.00 each; dozen, \$10; tested queens, \$1.25 each; dozen, \$12.00. Safe arrival and satisfaction guaranteed.

H. C. CLEMONS, Boyd, Ky.

MASON SAVES YOU MONEY FENCE

Lowest Prices, Highest Quality.
Largest stock & quickest service. Everything in fences and gates direct from our factory. Money-back trial, 60 days. Can you beat it? Write for FREE CATALOG.
MASON FENCE CO., Box 88, Leesburg, O.

With Half the Work

Nine sprays—same nozzle—round or flat—coarse or fine—cover twice the foliage.

"Kant-Klog" Sprayer

Nozzle cleaned while working. Spray starts or stops instantly. 10 styles. Write now for special offer. Agents wanted.

ROCHESTER SPRAY PUMP CO.
207 Broadway Rochester, N. Y.

Hill's Evergreens Grow

Best for windbreaks. Protect crops and stock. Keep house and barn warmer—save fuel—save feed. Hill's evergreens are hardy, nursery-grown—low priced. Get Hill's free illustrated evergreen book and list of Great Bargain Offers—from \$4.50 up per Thousand. 56 years experience. World's largest growers. Write, D. HILL NURSERY CO., Inc. Evergreen Specialists.
246 Cedar St., Dundee, Ills.

GREIDER'S FINE CATALOGUE

and calendar of pure-bred poultry for 1914. large, many pages of poultry facts, different breeds in natural colors, 70 varieties illustrated and described; incubators and brooders; low price of stock and eggs for hatching. A perfect guide to all poultry-raisers. Send 10c for this noted book.

B. H. GREIDER, Box 50, Rheems, Pa.

"The Doolittle Plan"
of working out-apiaries is fully described in The Management of Out-apiaries by the well-known author, G. M. Doolittle, of New York.

This is the new title of "A Year's Work in an Out-apiary" by the same author. This is the fourth revision of his work on this topic of management of outyards. If you haven't a copy of former editions you should not fail to get this new 1913 edition, which is just off the press. Price 50 cts. postpaid.

Order now from the publishers.

The A. I. Root Co., Medina, O.

SPECIAL NOTICES

BY OUR BUSINESS MANAGER

NEW POWER PLANT.

As we go to press we are just starting our new compound Skinner engine, which is supposed to pay for itself in about two years in the saving in fuel. In fact, the makers have so much confidence in it that they contract to take their pay in monthly payments equaling the value of the fuel saved. We are already pretty well filled with orders, and expect to have one of the best seasons we ever had. New catalogs are out. If you have not received one, send a request for it.

BEEWAX WANTED.

We do not remember a year when the demand for beeswax has kept the price up through the fall as it has the past year. As we enter on the new year the demand is on the increase, and supplies seem to be scarce. We are offering a higher price than we have ever advertised before—32 cents cash 34 in trade for average wax delivered here, with a premium for choice yellow of one to two cents. We are also prepared to work your wax into foundation. See advertisement on another page.

MIXED SWEET-CLOVER SEED.

We are prepared to offer a bargain in unhulled sweet-clover seed, if you can use the yellow biennial and the white mixed. Unless you plan a crop for seed there is no real objection to the mixture. In fact, it ought to be an advantage, as the yellow comes into bloom usually about two weeks earlier than the white. We can offer this seed in New York State, subject to previous sale, at \$1.30 for 10 lbs.; \$3.00 for 25 lbs.; \$11.00 per 100, or 500 lbs. for \$50.00. The demand for seed continues keen; and the prospect is that we shall be compelled soon to mark up our prices.

Some are looking with more favor on the annual yellow as a soil-improver in connection with other field crops. It may be sown with oats or other grain in the spring; and if conditions are favorable it will make quite a growth, and may be plowed under after the main crop is harvested, and greatly improve the soil by adding nitrogen as well as humus. The seed is cheap, and it is worth trying.

Convention Notices

The Ohio State convention will be held here Feb. 12 and 13. Dr. Burton N. Gates, President of the National, will be here for three addresses. Other speakers of national reputation are expected to be present. Program of meeting will appear in next issue of GLEANINGS.

Athens, Ohio, Dec. 16.

W. A. MATHENY.

The thirty-third annual convention of the Colorado State Beekeepers' Association will be held at the Auditorium Hotel, Denver, Col., January 20, 21, 1914. The annual reduced rates during the livestock show will make it possible for beekeepers to take advantage of the half-fare and also attend the stock show, which will be open all the week.

The program has not been entirely arranged for, but we are to have some exhibits of interest to all beemen.

Boulder, Col., Dec. 17.

WESLEY FOSTER, Sec.

The annual convention of the State Beekeepers' Association will be held at the Agricultural College, Jan. 30, 1914, under auspices Extension Division. Special rates over all Utah railroads.

An exhibit of bees and beekeeping appliances will be open to the beekeepers and other visiting farmers and housewives in the College Museum.

IMPORTANT MEETINGS FOR BEEKEEPERS.

Farmers' round-up and housekeepers' conference, Jan. 26 to Feb. 7. State poultrymen's convention, Jan. 29-31. State poultry show, Jan. 26-31. State dry-farmers' convention, Jan. 31. State dairymen's convention, Feb. 2. Utah Development League, Jan.

Program of South Dakota Beekeepers' Association. Convention, at rest room, court-house, Vermillion, Jan. 21, 1914:

Greetings, 11:30 A. M.

AFTERNOON SESSION, 1:30 P. M.

Beekeeping for women.....Rhoda Carey
Bees on the farm.....G. W. Webster
Experiences of marketing honey...W. P. Southworth
Best size of section and hive to adopt..R. A. Morgan
Question-box.

EVENING SESSION, 7:30 P. M.

President's annual address.....R. A. Morgan
Election of officers
Wintering bees.....J. Duffack
Production of comb honey.....F. A. Dahl
Production of extracted honey.....T. M. Goddard
Wax-rendering.....E. G. Brown
Sweet clover as a forage plant....T. H. Wadsworth
Question-box.

L. A. SYVERUD, Secretary.

The National Beekeepers' Association convention will be held in St. Louis, Feb. 17, 18, 19. The exact meeting-place, program, and entertainment will be announced in a subsequent issue. Concerning the program it may be announced that the foremost authorities in the country are being solicited for contributions, and it is assured that many of these will respond. The convention will be divided into sessions for business, and for the reading and discussion of apicultural subjects. At business sessions the delegates from the various affiliated associations throughout the country will prosecute the usual annual transactions. The general sessions for papers and discussions, it is hoped, will cover a series of special subjects, as, for instance, a short session on bee diseases and their treatment; a session on the apicultural conditions of various localities of the country. It is hoped to have a discussion of wintering, the growing queen industry, and to make a feature of the demonstrations and discussion of new inventions and manipulations. It is, furthermore, hoped that at least some of the lectures may be illustrated with lantern slides.

Can you not attend this convention? The sessions are open to all interested in the promotion of beekeeping. Keep close watch of the beekeeping press for subsequent announcement. The undersigned would be grateful for suggestions and inquiries. What can you contribute to the convention?

BURTON N. GATES, President.

Amherst, Mass., Dec. 23.

The annual meeting of the New Jersey State Beekeepers' Association will be held at the Entomology Building, New Brunswick, N. J., January 21, 22, 1914.

Officers: C. H. Root, Red Bank, N. J., President; Joseph Horn, Westwood, N. J., 1st Vice-president; Harold Hornor, Mt. Holly, N. J., 2d Vice-president; W. E. Housel, Hampton, N. J., 3d Vice-president; E. G. Carr, New Egypt, N. J., Secretary-Treasurer.

JANUARY 21—10:30 A. M.

Reading of minutes. Report of Secretary-treasurer. Economical Increase, Harold Hornor, Mt. Holly. Question-box.

2 P. M.

Comb Honey Production, Wm. Housel, Ringoes; W. E. Robinson, Groveville; W. E. Housel Hampton. The Bard foundation-fastener demonstrated. Discussion on the Crane comb-honey case. Election of delegate to meeting of State Board of Agriculture. Election of representative to National Beekeepers' Convention, St. Louis, Mo., Feb. 17, 1914. Question-box.

7:30 P. M.

Address of Welcome, Dr. Headlee, State Entomologist; "The Dollar-and-cent Side of Beekeeping," A. C. Miller, Providence, R. I. Question-box.

9:30 A. M.

"Fancy Extracted-honey Production," L. K. Cole, Stanton, "How I Produce Extracted Honey," Henry Bassett, Salem. "Two Essentials in Honey Production," Dr. Phillips, Washington, D. C. The steam-heated uncapping-knife and automatic reversible extractor will be demonstrated. Question-box.

No live beekeeper can afford to miss hearing Dr. Phillips and Mr. A. C. Miller.

PRIZES.

Mr. I. J. Stringham, 95 Park Place, New York, offers for best 10 lbs. comb honey, Langstroth on the Honeybee, and a year's subscription to *American*

Bee Journal. For best 10 lbs. extracted honey, the same.

W. T. Falconer Manufacturing Company, Falconer, N. Y., offers for second-best 10 lbs. comb honey, 5 lbs. light surplus foundation. For second-best 10 lbs. extracted honey, one Dewey foundation-fastener.

Dadant & Sons, Hamilton, Ill., offer for best 5 lbs. beeswax, 5 lbs. medium brood foundation. For second-best 5 lbs. beeswax, Langstroth on Honeybee. For best new aparian devices, 5 lbs. thin surplus foundation.

The Jefferson and St. Lawrence County Beekeepers' Societies will hold a joint meeting in the Chamber of Commerce rooms, Flower Building, Watertown, N. Y., Wednesday and Thursday, Jan. 21 and 22, 1914.

OFFICERS OF JEFFERSON COUNTY ASSOCIATION.
President, A. A. French; Vice-president, F. H. Loucks; Secretary and Treasurer, Hudson Shaver.

OFFICERS OF ST. LAWRENCE COUNTY ASSOCIATION.
President, F. C. Hutchins; Vice-president, C. Otto Enders; Secretary and Treasurer, Racine Thompson. These meetings are held under the direction of the Bureau of Farmers' Institutes, New York State Department of Agriculture.

The following is the program:

WEDNESDAY, 10:30 A. M.

Address of Welcome, A. A. French.

Response, F. C. Hutchins.

Reports of officers and committees.

Call for unfinished business.

New business.

Paying dues.

Adjournment for dinner.

1:30 P. M.

Which is of the most importance—temperature or fresh air for cellar wintering? Edgar Elethorp, Hammond.

To emulate and promote the bee industry, Chas. J. Cady, Adams Center.

Rearing Good Queens, Roy Keet, Black River.

Is it desirable to keep bees in the shade? F. A. Miller, St. Lawrence.

How can the price of honey be improved to the producer? A. J. McCoy, Gouverneur.

Discussion; question-box; adjournment.

7:30 P. M.

Address of welcome, Mayor Isaac Breen.

The good that bees do for humanity, F. H. Loucks, Lowville.

What would you advise as side lines to beekeeping? Wm. Davis, Ogdensburg.

Arrangement of the apiary, Geo. B. Howe, Black River.

How can a beekeeper best improve his bees? Racine Thompson, DePeyster, N. Y.

Discussion; question-box, adjournment.

THURSDAY, 10 A. M.

What is the best method for a beekeeper to raise his own queens? C. O. Enders, Oswegatchie.

My experience with European foul brood, and how I got rid of it, Hudson Shaver, Perch River.

Wit and humors of the bee and the beekeeper, D. R. Hardy, Burrs Mills.

Marketing the honey crop, Ralph Hibbard, Evans Mills.

Which is the best for the beekeeper—comb honey, extracted, or both? A. R. Young, Rossie.

Discussion; question-box; adjournment.

1:30 P. M.

Hive ventilation of bees in the cellar, F. C. Hutchins, Massena Springs.

How my bees produced 5000 lbs. of honey this season, Roy Keet, Black River.

Modern methods of caring for extracted honey, F. H. Loucks, Lowville.

The secret of securing a good crop of comb honey, A. A. French, Black River.

Profitable and unprofitable expenditures of labor in honey production, Geo. B. Howe, Black River.

Discussion, question-box.

Two or more speakers of the State Commission of Agriculture are expected.

This Washer Must Pay for Itself

A MAN tried to sell me a horse once. He said it was a fine horse, and had nothing the matter with it. I wanted a fine horse. But I didn't know any thing about horses much. And I didn't know the man very well either.



So I told him I wanted to try the horse for a month. He said "All right, but pay me first, and I'll give you back your money if the horse isn't all right."

Well, I didn't like that. I was afraid the horse wasn't "all right," and that I might have to whistle for my money if I once parted with it. So I didn't buy the horse although I wanted it badly. Now this set me thinking.

You see I make Washing Machines—the "1900 Gravity" Washer.

And I said to myself, lots of people may think about my Washing Machine as I thought about

the horse, and about the man who owned it.

But I'd never know, because they wouldn't write and tell me. You see I sell my Washing Machines by mail. I have sold over half a million that way.

So, thought I, it is only fair enough to let people try my Washing Machines for a month, before they pay for them, just as I wanted to try the horse.

Now, I know what our "1900 Gravity" Washer will do. I know it will wash the clothes, without wearing or tearing them, in less than half the time they can be washed by hand or by any other machine.

I know it will wash a tub full of very dirty clothes in Six Minutes. I know no other machine ever invented can do that, without wearing out the clothes.

Our "1900 Gravity" Washer does the work so easy that a child can run it almost as well as a strong woman, and it doesn't wear the clothes, fray the edges, nor break buttons the way all other machines do.

It just drives soapy water clear through the fibers of the clothes like a force pump might.

So, said I to myself, I will do with my "1900 Gravity" Washer what I wanted the man to do with the horse.

Only I won't wait for people to ask me. I'll offer first, and I'll make good the offer every time.

Let me send you a "1900 Gravity" Washer on a month's free trial. I'll pay the freight out of my own pocket, and if you don't want the machine after you've used it a month, I'll take it back and pay the freight too. Surely that is fair enough, isn't it?

Doesn't it prove that the "1900 Gravity" Washer must be all that I say it is?

And you can pay me out of what it saves for you. It will save its whole cost in a few months, in wear and tear on the clothes alone. And then it will save 50 cents to 75 cents a week over that in washwoman's wages. If you keep the machine after the month's trial, I'll let you pay for it out of what it saves you. If it saves you 60 cents a week, send me 50 cents a week till paid for. I'll take that cheerfully, and I'll wait for my money until the machine itself earns the balance.

Drop me a line to-day, and let me send you a book about the "1900 Gravity" Washer that washes clothes in six minutes.

Address me this way—H. L. Barker, 1127 Court Street, Binghamton, N. Y. If you live in Canada, address 1900 Washer Co., 355 Yonge St., Toronto, Ontario.

Those who travel have always stories to tell of their experiences at the custom-houses. Irritating sometimes, these experiences are often amusing, especially when they are taken in the optimistic spirit of such a traveler as the president of the United Society of Christian Endeavor, who will describe his adventures in the next volume of *The Youth's Companion*.

EARLY-ORDER CASH DISCOUNTS

Apply Here just as they
do at the Factory

As Southwestern distributors of **ROOT'S BEEKEEPERS' SUPPLIES**, we are very glad to make this first announcement of a special discount for early orders, accompanied by cash, to our beekeeping friends throughout this territory.

We give exactly the same discount that is granted by the manufacturers of these famous goods, and the prices in our special catalog are the same as their own. There is an extra saving for you in ordering from us—**FREIGHT**. Better give this your special attention before ordering from elsewhere.

THE CASH DISCOUNT ON EARLY ORDERS PLACED IN JANUARY IS 3 PER CENT.

This applies to every thing in the way of beekeepers' supplies except a few special articles. On large general orders we will allow the discount on some of the excepted articles, not exceeding ten to twenty per cent of the entire order.

REMEMBER WE MANUFACTURE THE FAMOUS WEED PROCESS COMB FOUNDATION.

We have a large demand for this product, and are turning out comb foundation of the finest quality. Include what you will need for the opening of next season in your early order. Shipment may be held subject to your convenience if desired; but get your order in now and save 3 per cent.

Toepperwein & Mayfield Co.
San Antonio, Texas

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GLEANINGS IN BEE CULTURE, THE DELINEATOR,	1 year \$1.00,	Both for \$2.00
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GLEANINGS IN BEE CULTURE, EVERYBODY'S MAGAZINE,	1 year \$1.00,	All for \$3.15
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GLEANINGS IN BEE CULTURE, NATIONAL STOCKMAN AND FARMER,	1 year \$1.00,	Both for \$1.50
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GLEANINGS IN BEE CULTURE, WEEKLY INTER OCEAN (Chicago),	1 year \$.50,	Both for \$1.15
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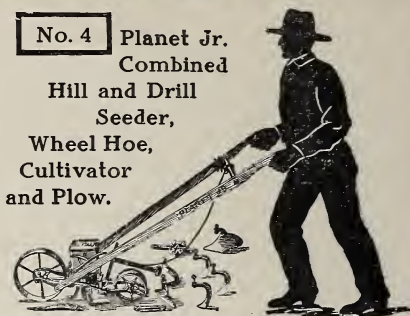
The A. I. Root Company, Medina, Ohio

Planet Jr.



No. 25 Planet Jr.
Combined
Hill and Drill
Seeder, Double
Wheel Hoe,
Cultivator
and Plow.

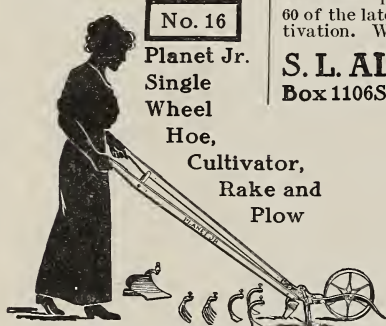
A capital implement for large scale gardening especially. It has steel frame, and complete seeding and cultivating attachments. The hoes run close to row without danger to leaves or roots. Two acres a day can be easily worked with this tool.



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Combined
Hill and Drill
Seeder,
Wheel Hoe,
Cultivator
and Plow.

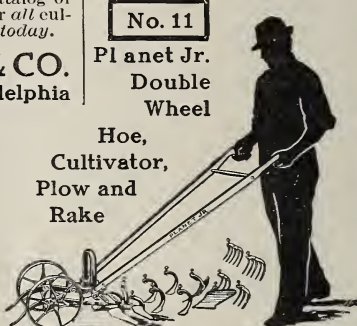
You need these scientific soil-tillers to save time, lighten labor, and get bigger crops from your farm and garden. Planet Jr. tools are backed by more than 40 years' experience. They range from \$2 to \$100, and are fully guaranteed.

This is a practical every day time, labor, and money saver. It combines in a single implement a capital seeder, an admirable single wheel hoe, furrower, wheel-cultivator, and a rapid and efficient wheel garden plow. Sows all garden seeds in drills, or in hills 4, 6, 8, 12, or 24 inches apart.



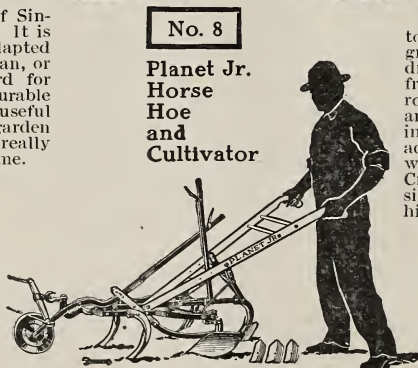
No. 16 Planet Jr.
Single
Wheel
Hoe,
Cultivator,
Rake and
Plow

The highest type of Single Wheel Hoe made. It is light, handy, and adapted to use by man, woman, or child. Has leaf guard for close work, and a durable steel frame. A most useful tool in the family garden that makes the work really a spare-moment pastime.



No. 11 Planet Jr.
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Wheel
Hoe,
Cultivator,
Plow and
Rake

The greatest cultivating tool in the world for the grower of garden crops from drilled seeds. It has steel frame. The plow opens furrows for manure, seed, etc., and can be reversed for covering. The cultivating teeth are adapted for deep or shallow work and for marking out. Crops can be worked both sides at once until 20 inches high.



No. 8 Planet Jr.
Horse
Hoe
and
Cultivator

The best-known cultivating implement made. It is so strongly built that it withstands incredible strain, yet it is light and easy to handle. Has new steel wheel—will not clog with stones or trash. Cultivates to any depth and adjusts to any width. Opens and closes furrow, and hoes right up to plants without danger of injuring them.

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